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TELECOMMISSION STUDY-1 (d)

ANALYSIS OF RELATIONSHIP BETWEEN THE FUNCTIONS OF THE COMMON  
CARRIERS AND THOSE ENGAGED IN BROADCASTING



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This Report is to be considered as a background working paper and no effort has been made to edit it for uniformity of terminology with other studies.





TELECOMMISSION STUDY 1 (d) - ANALYSIS  
OF RELATIONSHIP BETWEEN THE FUNCTIONS OF THE  
COMMON CARRIERS AND THOSE ENGAGED IN BROADCASTING

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## 1. INTRODUCTION

### 1.1 BACKGROUND

This report discusses three of the major industries in Canada which use telecommunications facilities and the relationship among them. The telecommunications common carriers provide a communications service to the public based on extensive hardware facilities of their own; generally speaking they provide no software services. The broadcasters provide an entertainment and information service to the public using software or program material which they produce or acquire; and make use of extensive studio and broadcast transmitting facilities of their own and the distribution facilities and services of the common carriers on a rental basis. The newest is the cable-casting or CATV industry. Using recently developed techniques and its own hardware in some cases and that of the common carriers in others, it provides, on a fee basis, an entertainment and information distribution service to the public, made up largely of "off-the-air" pick-ups of broadcasting stations. In this portion of its business, it is not creating software and therefore resembles a common carrier. On the other hand it does in some cases produce local programming and to this extent resembles the broadcasting industry.

In the light of forecast developments in telecommunications technology in the use of intra-city coaxial cable systems or the so-called "third grid", the Telecommisison requested that a study be made of the relationship between the



common carriers and those engaged in broadcasting of all kinds.

While there is no formal definition in Canada of common carriers, for the purpose of this study they are assumed to be those companies offering telecommunication distribution services and paths for hire to the public, such as the Canadian telephone and telegraph companies.

The Minister of Communications has a statutory responsibility for the development and utilization generally of communication systems and services for Canada, to the extent that they are subject to Parliament's jurisdiction and are not assigned by law to another department or agency of the Government, including the regulation of telecommunication, both public and private, and the technical aspects of broadcasting. This also includes ensuring the rational use of the radio frequency spectrum and the setting of technical performance standards.

Broadcasting includes all those radiocommunications in which the transmissions are intended for direct reception by the general public. Such radiocommunications embrace both broadcasting transmitting undertakings (AM, FM and TV stations) and broadcasting receiving undertakings (CATV systems). It is important to note that, by definition in the Broadcasting Act, a "broadcaster" is one who "carries on a broadcasting transmitting undertaking" and does not include one who operates a CATV station; this distinction is followed in this report. However both classes of undertaking are subject to the licensing and regulatory jurisdiction of the Canadian Radio-Television Commission (CRTC),

pursuant to the broadcasting Act, and to technical regulation under the Radio Act.

Subject to the Broadcasting Act and the Radio Act, and directions issued by the Governor in Council the CRTC has a statutory responsibility for supervising and regulating all aspects of the Canadian broadcasting system, to implement the objectives of the Broadcasting policy for Canada set out in the Broadcasting Act.

## 1.2 OBJECT OF STUDY

It was agreed that this study would be concerned primarily with analyzing the respective roles of the common carrier companies and those engaged in broadcasting, in respect of those services and functions which bear on the interests of the other, with a view to assembling facts which would form a basis for making recommendations contributing to the development of a national telecommunications policy for this relationship.

## 1.3 SCOPE OF STUDY

This study was divided into two parts;

Section A - The present situation and future developments, and

Section B - Specific questions to be studied with conclusions and recommendations.

The detailed scope of the study is set out in the Table of Contents.

## 1.4 SUBMISSIONS AND PARTICIPANTS

Submissions to this study were received from the following, representatives of whom were members of the project team:

1. Trans-Canada Telephone System (TCTS).
2. Canadian Association of Broadcasters (CAB).
3. Canadian Cable Television Association (CCTA).
4. Canadian National/Canadian Pacific Telecommunications (CN/CP).
5. Canadian Broadcasting Corporation (CBC).
6. Telesat Canada.
7. Electronic Industries Association of Canada (EIAC).

Also participating in the deliberations were representatives from the Secretary of State Department, the CRTC and the Department of Communications (DOC).

Section B is largely a report of the views of the industries involved and is not to be construed as representing the views of the Telecommission.

#### 1.5 SUMMARY

The project team meetings represented an opportunity to reach a measure of agreement on matters that were the subject of divergent views but such did not emerge in most cases. The description of existing facilities, services, future developments and legal matters were not contentious. Also, it was evident from the discussions that the relation between the broadcasters and the common carriers is a fairly normal one. It is noted, however, that in the field of rates the broadcasters feel that it would be desirable to have uniformity of regulation across the country to facilitate carrying out their responsibilities. They also wish to be in a position to own certain transmission facilities because of the excessive cost which is suggested by the common carriers for providing the same facility. However they recognize and respect

the proven ability of the common carrier to provide the longer distance transmission facilities they need for network operations.

In contrast, it was quite clear that the competing aspirations of the CATV operators and the telecommunications carriers were so sharp as to make it impossible to draw any significant consensus on what their relationship should or might be in the future. Indeed, many CATV operators tend to regard themselves as common carriers and believe that any competition they can offer to the established telephone carriers to be a healthy development. On the other hand the carriers, especially the telephone companies, believe that many advantages result from having all telecommunications facilities provided by their organizations.

Despite the lack of unanimity displayed by the participants, it is hoped that this exposé will serve in some measure to assist in the formulation of policy for the future.



TELECOMMISSION STUDY 1(d)

SECTION A

2. TYPICAL BROADCASTING STATIONS,  
SYSTEMS AND RELATED FACILITIES

2.1 BROADCASTING STATIONS (GENERAL)

A typical broadcasting station includes facilities for sound and/or television transmission, auxiliary communications equipment, and interconnection facilities for network purposes. The broadcaster's plant is usually considered in two parts: the production facility commonly known as the studio (including control and recording facilities), and the radio frequency transmission facility, known as the transmitter. This is a natural concept, because in most cases the studio and the transmitter are located at different sites and interconnected by means of a studio/transmitter link, be it a landline or a radio link.

Broadcasting stations are operated as

- 1) A.M. broadcasting stations in the medium wave band  
540 - 1600 kHz (107 channels), or in various short-wave broadcasting bands;
- 2) F.M. broadcasting stations in the very high frequency (V.H.F.) band 88 - 108 MHz (100 channels); or
- 3) television (TV) broadcasting stations in the
  - a) very high frequency (VHF) bands 54 - 88 MHz  
and 174 - 216 MHz (channels 2 to 13)
  - b) ultra high frequency (UHF) band 470 - 890 MHz  
(channels 14 - 83).

The differences between AM and FM is in the mode of modulation (AM being amplitude modulation and FM being frequency modulation), the frequency band used, and the bandwidth required for transmission. Subjectively, FM signals are of higher technical quality because of a greater bandwidth allowing a greater audio frequency and dynamic range to be transmitted and also because FM signals are less subject to interference. The range of medium wave band AM is governed mainly by the attenuation of the ground wave. Shortwave AM broadcasting depends upon skywave propagation and is therefore subject to great range in the distances that may be reached. The effective range of both FM and television broadcasting is predominantly line of sight.

It is interesting to note that the total capital investment of the private broadcasters in their radio stations totals \$172,912,000 as of calendar year 1968. The payroll for that year was in excess of \$80,000,000 to the 10,000 employees in this industry.

For the CBC, whose financial year was from the 1st of April 1968 to the 31st of March 1969, the Corporation's capital investment was 100.6 million dollars. The payroll for that period was 89 million dollars for slightly more than 9,000 employees. This does not include payments to artists (musicians, writers, performers, commentators, etc.,) which was 23 million dollars.

## 2.2 AM BROADCASTING STATIONS

The assignment of channels for medium wave band AM broadcasting in Canada is determined in accordance with the North American Regional Broadcasting Agreement, 1950 (NARBA).

Under NARBA stations are classified as follows:

- 1) Class I station is a broadcasting station designed to provide broadcasting service over extensive areas by both ground wave and sky wave signals on a clear channel.
- 2) Class II station is a broadcasting station, operating on a clear channel and designed for broadcasting service by means of ground wave signals only.
- 3) Class III station is a broadcasting station operating on a regional channel and designed for broadcasting service by means of ground wave signal only.
- 4) Class IV station is a broadcasting station operating generally on a local channel and designed for broadcasting service by means of ground wave signal only.

In Canada the Canadian Broadcasting Corporation has been given a priority on Class I and Class II stations to enable them to provide a national service using the "clear" channels assigned to Canada. The private segment of the Canadian broadcasting system is therefore confined to Class III and IV stations or "regional" or "local" channels.

### 2.2.1 Class IV (Local Channel) Station

Of the 107 channels in the broadcast band, 6 are designated as local channels. In Canada there are 67 private stations and 3 CBC on these channels. Stations on local channels usually operate with powers of 1000 watts daytime and 250 watts at night, and are intended to serve a city and the contiguous area, which must necessarily be considered small in view of the signal level that is required to provide adequate service.

The physical plant is invariably located at two separate sites, the studio within the community it serves, and the transmitter at a site on the edge of the area to be served where coverage of that area and protection of other stations is assured.

In such a small station, the production facility is usually modest and, aside from the necessary administration space, comprises a small announce studio and an announce/operate control room. There would be space for a record library as well as an area designated as a "newsroom". Staff will be minimal, with many personnel handling multiple jobs. Additionally, there may be equipment for the automatic programming of the station using prerecorded tapes.

The transmitting facility of a small station is also modest. The transmitter site would be a parcel of land about 16 acres on which stands a transmitting tower and buried below



is a ground system of 120 copper wire radials extending from the towerbase. Near the tower there would be located a building of sufficient size to accommodate a 1 kilowatt transmitter, antenna matching equipment and a standard rack for associated and monitoring equipment.

Interconnecting the studio with the transmitter site may be either a landline supplied by a common carrier or a radio link owned by the station. This program link usually has an audio frequency bandwidth of 8 kHz minimum. Most AM stations also make use of facilities to remote control the transmitter from the studio and for monitoring its operation. The supply of a pair of direct current lines by the common carrier, dedicated for remote control purposes, is a vital part of transmitter facilities comparable to the program line.

2.2.2 Class I and II Clear Channels and  
Class III Regional Channel Stations

Of the 107 channels in the broadcast band, Canada can use 7 clear channels for Class 1-A and Class II stations; 5 clear channels for Class 1-B (shared with other countries) and Class II stations and 41 regional channels for Class III stations. To facilitate the provision of a national service with stations having the widest coverage, the CBC has been authorized to use the clear channels with the exceptions that two private stations have been authorized respectively to operate on one Class 1-A and one Class 1-B channel. However, since CBC service cannot be accommodated on the limited number of clear channels the CBC also uses regional channels. Generally speaking with a few exceptions

all private stations use regional or local channels. When stations in one country operate on clear channels of another country they become Class II stations but they are treated for protection similar to Class III stations. There are a total of 259 of these (CBC and private) serving medium market or metropolitan areas.

### 2.2.3 Medium Market Station

Typically, medium market areas are served by Class II stations on clear channels and Class III stations on regional channels at power levels up to 10 kilowatts with an omnidirectional or directional antenna during the day-time, and a directional antenna during the night-time.

An example of this category of station, which can be considered typical, occupies 3600 square feet on one floor of a prominent building in the heart of a city. Of this, approximately two-thirds of the floor space is devoted to the production facilities while the remaining one-third is utilized for office and administrative purposes. There would be one large studio, two announce studios, two control rooms, a library for storage of approximately five thousand long play records, a newsroom, engineering workshop and administrative offices. Since a medium market station has the obligation to serve a larger population and area than a local channel station, many such stations operate on a twenty-four hour basis. This requires staffing by twenty-five to thirty people.

A typical CBC medium-sized station must provide for a considerable live production capability which is not always the

case in the situation faced by private medium-sized stations. Where the latter is in a position to provide for the production of local commercials and live deejay programming, together with some country and western capability, the CBC must be in a situation where major talent support can be given. This requires reasonably complete studio facilities and high quality recording equipment. For example, the CBC must regularly broadcast symphony programming from the Maritimes, from Quebec City, from the Prairies and British Columbia. Live drama must be originated from all of these locations of a quality sufficient to include in the network radio programming of the national service on a more or less regular basis. Thus, to meet these requirements, the CBC's facilities must be somewhat more complete.

At the transmitter site, located some miles from the studio, there is usually a directional antenna system for both day and night radiation patterns. This typical directional antenna consists of three vertical towers spaced 360 feet. Each tower has a ground system made of 120 radials of copper wire. Such a system probably requires up to fifty acres of real estate. A transmitter building houses the main transmitter, a standby transmitter, audio equipment, remote control equipment, a voltage regulator and a standby power generator. There is coaxial transmission line system for feeding the transmitter signal to the towers of the antenna system. A phase monitoring system is provided for adjusting the phasing networks for the radiation pattern and to insure the stability of the pattern.

The studio and transmitter site are interconnected by an 8 kHz landline leased from the common carrier to carry programming, and by a spare program line for emergencies. A line may also be leased from the common carrier for remote control of the transmitter for unattended operation. Related facilities required by a medium market station include a number of program lines from various locations within the city which are used for remote origination of programs.

Mobile (VHF) two-way radio is utilized to transmit news happenings from the "on-site" location, but since the quality is narrow-band such use is limited to voice transmission. Many stations also use a specially manufactured remote broadcast link which operates in the VHF band with a 10 kHz bandwidth and power or about 30 watts when the common carriers cannot provide suitable lines for remote origination.

#### 2.2.4 Metropolitan Area Station

Typically, major metropolitan areas are served by Class I and II stations on clear channels and Class III stations on regional channels at power levels up to 50 kilowatts with omnidirectional or directional antennas.

In the metropolitan market, there is a keen competitive situation. The management of the stations is further concerned about two major points:

- a) to provide a signal to the public which is as strong as possible to overcome the increasing noise level; and



- (b) to ensure the continuity of service by utilizing standby equipment and by instituting a preventive maintenance program.

Typically a station serving a major metropolitan area whether it is CBC or private, on a clear or regional channel, will have a power of 50 K.W. If it is a CBC station on a clear channel it will have a single transmitting tower and an omnidirectional radiation pattern. If it is a CBC or private station or a regional channel it will have a multiple-tower directional antenna system. Further it may have to reduce power and/or change pattern for operation between sunset and sunrise.

In order to minimize the loss of listeners due to outages, this class of station takes many precautions through the use of back-up equipment. The studio and transmitter are equipped with emergency generators in case of hydro failure. The master operation in the studio may be switched from one console to another in case of failure. In linking the studio to the transmitter, a spare line may follow a completely different route from the point where it leaves the studio to the point where it reaches the transmitter in order to avoid localized problems such as accidental breaks in the cable. The spare link may be in the form of a studio-transmitter radio link or similarly, if the main program link is by VHF radio, the spare link may be a landline. It is imperative that there be a standby transmitter and emergency power generator capable of operating minimal ancillary equipment

as well as the standby transmitter. The antenna tuning and phasing network is fitted so that omnidirectional operation at reduced power using one antenna tower may be permitted in emergency.

Otherwise the facilities of the station, the studio and studio/transmitter link do not differ from those described for a medium market station except as to size and the power used. A private metropolitan market station requires more space, has more employees who are specialists, and usually operates twenty-four hours a day seven days a week. VHF mobile radio equipment is used more extensively for mobile news cruisers operating on land, water and in the air. Traffic reports from helicopters are expected as a service from broadcasting stations in many cities.

In the case of a CBC station which is a regional centre or a network production centre such as Toronto or Montreal, considerably larger studios and general facilities are incorporated. These are of the order of anywhere from 10 to 20 or 25 studios and booths and provide for a broad range of production capabilities in French, English, and in the case of Montreal, for the many languages of the International Service.

The production facilities are complex and modern. They provide for the production of professional orchestral recording sessions in both monophonic and stereophonic modes, the production of programs of the nature of the largest of the modern

operas -- large symphony orchestral productions on a regular basis, and major drama presentation in both the traditional and modern fields. The writing and production of original Canadian dramas are a large feature of the Corporation's radio service in both languages.

These studios are also capable of the smaller and larger variety programs (Funny You Should Say That, Nimmons and Nine Plus Six, Un Instant, etc.)

Over and above the studio facilities, there is provided a complement of mobile equipment which ranges from the simple portable recorders for news and current affairs interviews to the multi-channel portable master control and studio control equipment adequate to cover a Royal Visit, a major political convention, the Canada Games, etc. Included in this is the provision of portable high quality stereo recording equipment for the production of master tapes of such groups as the National Arts Centre orchestra in Ottawa, the Toronto Symphony, the Montreal Symphony, the Vancouver chamber orchestra, etc. All in all, the CBC has established and maintained through its modern facilities and techniques, a production output and a quality which ranks among the best of the national broadcasting services of the world. Indeed, this is one of the ways in which the CBC is required to fulfil its mandate to be a complete broadcasting service.

#### 2.2.5 Low Power (AM) Relay Stations.

In the field of development of broadcast coverage, Canada

through the Canadian Broadcasting Corporation has been a pioneer. Because of the width and depth of the country and the scattered number of pockets of population concentration, the CBC in bringing its national service to the maximum number of people (it now stands at 98+%) had to design and construct a small, low-power transmitter (20 to 40 watts) in the standard broadcast band for connection to the national English or French language network service at various telephone or telegraph repeater locations in population centres which were too small to have either private radio stations or CBC stations in the normally understood meaning of this term. At the present time, the CBC operates over 200 of these low power relay transmitters (LPRTs) and in this way has made possible the provision of a high quality radio service to the most remote of the rural and northern areas of the country.

### 2.3 FREQUENCY MODULATED (FM) STATIONS

The allocation and use of FM broadcast channels by Canada and the United States in the area lying within 250 miles of their common border are governed by the Canada/U.S.A. FM Agreement of 1947. Table A and Table B of this Agreement allocates specific channels to specific locations in Canada and the United States respectively. Stations are classified as follows:

Class A	Effective Radiated Power (ERP)	3 kilowatts
	Antenna Height Above Average Terrain	300 feet
Class B	Effective Radiated Power	50 kilowatts
	Antenna Height Above Average Terrain	300 feet



Class C1	Effective Radiated Power	100 kilowatts
	Antenna Height Above Average Terrain	1000 feet
Class C	Effective Radiated Power	100 kilowatts
	Antenna Height Above Average Terrain	2000 feet

At December, 1970 there were 86 FM broadcasting stations and 5 FM rebroadcasting stations, CBC and private, licensed in the Canadian broadcasting system.

The FM broadcasting allocation structure comprises 100 channels centered on frequencies separated by 200 kHz. FM channels have sufficient bandwidth to make it possible to use multiplex transmissions. By using multiplex equipment it is possible to transmit stereophonic programming and subsidiary communications such as background music for stores (store-casting) factories etc. Thus an FM station may be classified according to its operation as a basic FM station or as a station that provides multiplex transmissions.

#### 2.3.1 Basic FM Station

Since the majority of FM stations are owned in conjunction with AM stations, a description of a typical station must consider the fact that certain facilities are shared, primarily the staff, function and space for administration. Otherwise to provide for separate FM programming physical accommodations must be made.

At the studio, an extra announce control room is provided, with this and other studios and control rooms being utilized together to provide separate programming for AM and FM. In some cases there is physical separation of production facilities such as studio, control rooms and record library, all dedicated to FM programming.

At the transmitter site, since the propagation of radio waves has "line-of-sight" radiation characteristics, the antenna is installed as high as possible such as on top of the highest building in the area, co-siting with television transmission towers, or placing the antenna on a mountain. The basic equipment, besides the transmitter building, includes the FM transmitter, transmission line, support tower, FM antenna and racks to hold the audio, monitoring and remote control equipment.

The preferred method of studio/transmitter link is by means of a radio STL which is capable of a frequency response of 15 kHz. Operational control and monitoring of the FM transmitter is usually from the studio. Usually landlines are leased from the common carrier for this purpose.

The related facilities, including auxiliary communications equipment, are similar to those discussed under AM stations as it concerns remote lines supplied by common carriers and VHF mobile radio for news service. Emergency or standby equipment is not as necessary as for AM station operation because FM transmitters are usually located where hydro supply is more reliable.

For some years now, the CBC has maintained as part of its International Service programming distribution abroad, a professional recording facility. Starting originally in monophonic recordings, the service now provides many examples of Canadian drama and music in stereo. This latter development

has also been accompanied by a similar, though somewhat limited, stereophonic production service on disk of the CBC's feature radio orchestras and choruses.

### 2.3.2 FM Multiplex Operation

In multiplex operation provision is now usually made for compatible stereophonic broadcasting transmission which may be received by the general public either on FM receivers fitted for stereo reception or on monaural receivers. Subsidiary communications i.e. "storecasting" may be multiplexed on the transmitted FM signal in such a way that it does not interfere with the normal FM stereo program broadcasts. Special receivers are required to receive "storecasting" transmissions. These receivers are rented from the broadcaster or the franchised storecasting operator providing such a service. Of the 78 private FM stations, 51 are transmitting stereo information and 24 are providing subsidiary communications.

For the transmission of stereophonic information twin channel equipment is necessary to carry the "left" and "right" signals from the source, (studio, tape or record) to the transmitter where the multiplexing takes place to "put" both signals on the FM transmission. A radio link is needed to carry the left and right channels from the studio to the transmitter without phase shifts and distortion of the stereo program, which results if land-lines are used.

## 2.4 TELEVISION STATIONS

The allocation and use of television broadcasting channels by Canada and the United States in the area lying within 250 miles of their common border are governed by provisions set out in the Canada/U.S.A. Television Agreement of 1952. While this Agreement allocates specific channels to specific locations for Canada and the United States respectively it does provide for adjustment to meet changing needs in both countries.

On January 1, 1971 there were 103 television broadcasting stations licensed to the CBC and private broadcasters in Canada. These were supplemented by 113 television rebroadcasting stations that qualify to use a channel assignment. In addition there are 170 low power rebroadcasting stations operating with 5 watts pedestal power or less and not recognized as receiving protection. The following will describe three sizes of television stations, a rebroadcasting station, and a low-power (five watt) rebroadcasting station sometimes known as a translator.

### 2.4.1 Small Television Station

Before describing the small television station which applies to centres of population of the order of 40,000 households, it might be well to mention an unique development in the Canadian Broadcasting Corporation's Frontier Coverage Packages. These are small, self-contained transmitters for location in remote Northern or interior provincial towns. At present

writing (Spring 1971), there are some fifteen of these in operation and they are programmed from four hours of helical scan taped material, chosen from the CBC's English or French daily programming service. With the start of the Canadian satellite ANIK in late 1972 or early 1973, it is the CBC's plan to program these stations by direct feed from the satellite to receive locations adjacent to them.

In the small television station the studio and transmitters are often located together and this eliminates the operating expense of a studio consists of a single room in which there is an image orthicon camera and a vidicon camera for use from time to time mainly as a back-up. In the control room a simple studio switcher has provision for six inputs. A film chain with two 16 mm projectors and a slide projector will be utilized for local commercials, film clips and feature films. The largest single investment in equipment is the video tape recorder to record network shows for delay or for replaying local live shows at more convenient hours.

The program, (video and audio), is fed to the 5 kilowatt transmitter in an adjacent room. The antenna has a nominal gain of 6 to give approximately 30 kilowatts ERP on the low band.

This typical station employs 30 people and local production is carried out by a staff of four. It relies heavily on the programming available on the network and on rented syndicated and feature films.



#### 2.4.2 Medium Market Television Station

The coverage of a typical CBC or private station of this class is approximately 100,000 households. While it is usually affiliated with a network it would tend to produce more of its own programs.

The production facilities are contained in a building in which two floors are available. Approximately half of the floor space is used for production. There is one large studio in which there are two cameras, lighting equipment, a piano and an organ. In the control room there is the switcher, camera, controls, telecine control points, audio tape recorders, and a helical scan video tape recorder. In the projection room, the telecine chain and two video tape recorders are located. The typical station processes film in its own processing lab which during the last year processed up to 300,000 feet of film. The lab has a complement of enlargers and a dryer. The screening room contains two 16 mm sound projectors, a viewer, rewinder, and splicer. The film department is well equipped with a full range of movie and press cameras. This station also possesses two mobile units. One is a station wagon news cruiser which carries film equipment. The other is a mobile van complete with two or three cameras, switchers, etc.

Since the transmitter is probably located at a site separate from the studio there is a studio/transmitter link to carry the video signal consisting of coaxials cable if the distance is short or a microwave studio-transmitter link if the

distance is more than a few miles. The audio signal part of the program is usually carried on a cable pair. The transmitter and antenna combination produces 162 KW, effective radiated power (ERP). The antenna is tower mounted and would probably have an effective height above average terrain of up to 1000 feet.

The network video feed is obtained via a coaxial cable from the microwave terminal of the common carrier. The audio feed arrives by a different routing on landline. The common carrier may also provide temporary microwave links as required.

#### 2.4.3 Television Station Serving a Major City

A typical station of this class uses a total floor space of around 115,000 sq. ft. Three major studios make use of a combined floor space of 20,000 sq. ft. The transmitter building occupies 3,500 sq. ft. to house a maximum power television transmitter.

Many stations have their studios and transmitter buildings and antenna tower close together. If the tower is guyed and if its height is, say, 900 feet which is typical, the site could be as large as 30 acres. Video feed is by duplicate coaxial cables and the audio duplicate lines to the main transmitter and standby transmitter. The maximum effective radiated video power is 100 K.W. for channels 2 - 6 and 325 K.W. for channels 7 - 13 inclusive. The maximum effective radiated audio

power is 10% - 20% of the video power.

The typical station has seven major production control rooms associated with five studios. The Master Control is the central point for the integration and distribution of signals from such sources as studios, telecine and video tape, remotes, network feeds either to the transmitter or back to the network.

In connection with the network operation, one outgoing, two permanent and three occasional microwave links are used. These are rented by the station as a local connection between the station and the Toll Office of the common carrier. Associated with these microwave links are common audio pairs, and by further switching from the Toll Office signals can be received either from a remote, the network, or fed to the network.

Associated radio facilities include five cars equipped with two-way mobile radio operating in the 150 Mc/s band for the news/film service. Use is also made of mobile/field two-way General Radio Service equipment. Three main studios have studio (loop) paging facilities and radio (wireless) microphones.

The CBC in providing the national television broadcasting service of Canada, is placed in a unique position vis-à-vis the development of talent and the maintenance of a high quality and quantity of Canadian production in its schedules. This is especially true in television and particularly in the French language television service where access to a great deal of foreign programming is not as easy as in the case of the English Service Division. Montreal produces approximately 50 hours per week

of network Canadian programming during a typical Fall/Winter season. For Toronto, this figure reaches some 32 hours per week of network time with other locations in the English Service Division producing anywhere up to 18 to 20 hours per week of regional and local programming. These include Vancouver, Edmonton, Regina, Winnipeg, Ottawa, Montreal (English unit), Halifax, St. John's, and Corner Brook.

The large station production capabilities, e.g. Vancouver and Winnipeg, make use of two to six studios for a production output of from 15 to 20 hours per week. However, in comparison to the CBC production plants, at Montreal and Toronto these requirements are relatively modest.

Toronto and Montreal provide Canada with major modern production facilities, with a capability of an output, in the case of the French Service Division from Montreal, of about 50 hours of live or taped production per week and, in the case of Toronto, about 32 hours per week. Such CBC productions includes regular major programming, major variety specials, opera productions, major public affairs programming and complex and avant garde dramas as well as regular country and western programs. The producing of such programs require anywhere from six to twelve studios varying in size from 2,500 square feet upwards to 9,000 or 10,000 square feet in the case of the large completely color capable production units in Toronto and Montreal. Associated with these are the multi-channel video tape record and reproduce facilities, major master control centres, and telecine capability for the reproduction

integration of many programs simultaneously.

Over and above these are the large, five-camera mobile units of Toronto, Montreal, and Ottawa with the smaller two- or three-camera units and video tape cruisers which give the complete capability for production of anything from the size of the Canada or Summer Games to the major national events such as a Centennial Year with all of its requirements, an Expo '67, major political conventions, etc. The major programming studios referred to also produce most of the programming for the CBC radio services with the remainder being produced by CBC staff and facilities at locations such as the National Arts Centre in Ottawa, the Queen Elizabeth Theatre in Vancouver and elsewhere.

Again, in the field of artistic production and competence of its own staff and the Canadian artists it employs, Canada's national broadcasting service is considered among the best in the world and it should be emphasized that the programming output mentioned herein is not an occasional one, but is consistent year in and year out and, with the completion of Place Radio Canada in Montreal, the new consolidated production facilities for Vancouver, and the projected facilities for Toronto, it is hoped that this standard will be maintained as existing equipment and production space and facilities become obsolete as Canada completes the first 20 years of CBC television.



#### 2.4.4 TV Rebroadcasting Station

A rebroadcasting television station in this context is defined as a transmitter plant designed to extend the coverage of a television station. A typical rebroadcasting station is situated beyond the "B" contour of the originating television station. The program can be delivered to the rebroadcasting station site either by "off-air" pickup or by microwave link from the originating station. In any case the video signal is reprocessed through a stabilizing amplifier (to ensure that proper synchronizing signals are transmitted) and fed into a transmitter, typically 2 kilowatts which in turn is broadcast through a television transmitting antenna. This kind of installation contrasts with that of low-power "translator" rebroadcasting station described below.

#### 2.4.5 Low-Power Rebroadcasting Station

In many parts of Canada, particularly in the mountainous regions, television signals cannot be received in pockets of communities. In order to bring service to these people, there are many obstacles such as, the high cost of facilities to serve the small number of people, the inaccessibility of possible transmitter sites where signals can be received and retransmitted, and the high cost of delivery of electric power to such a site. The advent of transistors has allowed the production of television "translators" which can overcome these difficulties and provide a minimal television service.

The system concept is an antenna and receiver for picking up an existing television channel, a translator to convert it to another

channel, a transmitter and antenna, and a power supply. The receiving and transmitting antenna are simple. The power requirement of a five watt transmitter is a nominal 12 watts and this power can be generated in a propane thermal generator. A system such as this including a short metal tower (about 50 feet) and a hut to house the equipment, can be installed for approximately \$10 - 12,000. Maintenance is simple, and such trips can be minimized to about twice a year at which time replacement tanks for propane would also be delivered. This justifies the use of sites which may only be accessible by helicopters.

## 2.5 SHORT-WAVE BROADCASTING STATIONS

Canada operates a major shortwave broadcasting service through the International Service of the Canadian Broadcasting Corporation, occupying some 18 frequencies above 5 Mc/s. This service provides programming in eleven languages, directed from its Sackville transmitting plant through three 50-kilowatt transmitters (progressively being augmented by five 250-kilowatt transmitters) for service to Europe, Africa, South America, Asia, and Northern Canada.

The studios for this, as mentioned previously, are located in the CBC Montreal complex, and programming is fed to the Sackville plant by telecommunications carrier lines.

Associated with this service, the CBC provides a monitoring service to monitor its own and the performance of other international shortwave broadcasting stations. This work will be done from a newly-constructed shortwave receiving station just outside Ottawa, Ontario, and a minor receiving station near Vancouver.

A considerable part of the CBC's shortwave plant is also devoted to listeners in Northern Canada. Regular daily transmissions are scheduled on the 50 kilowatt transmitters but, progressively, use will be made of the 250 kilowatt transmitters with improved antennas directed specifically to Northern Canada, to supplement the existing radio and television service from CBC stations at remote locations throughout the North.

Several private broadcasting stations have associated with their operation relatively low power shortwave transmitters which simply rebroadcast the AM service which is being put out on the standard broadcast band. The most notable are stations in Montreal, Toronto, Sydney, Halifax, Calgary and Vancouver. The power of these transmitters, which operate on frequencies of the order of 6 Mc/s, range from 100 watts to 1 kilowatt, and the effectiveness of this service, is very low.

## 2.6 BROADCASTING NETWORKS

Broadcasting stations are interconnected as broadcasting networks for the regular exchange of broadcasting programs. These are licensed as network operations under the Broadcasting Act and certificated under the Radio Act. Network transmission facilities are obtained from the common carriers who provide, maintain and operate the circuits and equipment between the network terminals in the control rooms of the interconnected broadcasting stations. In addition the common carriers perform elaborate switching functions at the request of the broadcasters, to add and drop stations or to segment and re-configure the networks.

Network transmission for AM and FM stations is provided by either landline or microwave equipment depending on the facilities available to the common carrier. In the case of TV, video network service is provided by microwave and to a limited extent by coaxial cable while the associated audio network service is provided over microwave or landline facilities as in the case of AM or FM network.

The originating studio is responsible for arranging and producing the program as specified in the network schedule and for turning it over to the common carrier at the network terminals in the station's control room for distribution on the basis of the network's daily traffic order. Any further processing of content is done by the broadcasters receiving the program from the network before it is fed to the various transmitters. Normally there is no alteration in network program content other than the insertion of local promotional or commercial messages on a prearranged basis.

Networks are required to meet specified standards of performance which are checked regularly by the broadcasters. This is especially true in the case of television networks which are regularly checked during the vertical interval between program picture frames.

The first and continuing radio network broadcasting service in Canada is that of the Canadian Broadcasting Corporation in French and in English, which succeeded the Canadian Radio Broadcasting Commission's early networks. This service has developed with a combination of CBC owned and operated stations, low power relay transmitters, and affiliated stations until today it numbers some 265 stations for the English service

and some 85 for the French service, together with five stations of the FM radio network.

The television network which, in the case of the CBC, started development in September 1952, now numbers some 244 stations for the English service and 62 for the French service, made up of CBC owned and operated stations, relay stations, and affiliated stations.

One of the main features of the CBC's agreement with its network affiliate is the definition of the amount of CBC service to be carried by the individual station. In radio, this amount is referred to as 'reserve time' and in television as 'network option time'. Of course, every effort is made to provide a reasonable balance of program fare within these amounts in conformity with the Corporation's mandate under the Broadcasting Act. As of the 1970/71 Fall-Winter schedule, the following average network weekly service was scheduled:

French television network -- 79:45 hours (44:15 hours  
option time)

English television network - 53:35 hours (42:20 hours  
option time)

English radio network -- 30 hours (24:55 hours reserve  
time)

French radio network -- 42:52 hours (23:10 hours  
reserve time)

Note: The figures in brackets represent the minimum amount of network service which the affiliate is required to carry.



It will noted here that the CBC, in developing its network affiliation service has depended on the participation by private broadcasters in achieving the purpose of the Broadcasting Act.

In meeting the requirements of uniform schedule throughout Canada in its various time-zones, the CBC early recognized the need for comprehensive delay facilities. Originally this was accomplished through a distribution by 'kine recordings' prior to the inauguration of the CBC's microwave network (contracted through the carrier services).

At the present time, the CBC provides an advance service to the Maritimes which is pre-released in part through video tape delay facilities in Halifax to the Atlantic area (naturally, this service reaches Newfoundland one half-hour later than the other provinces in this area).

For the time zone changes to the West, the CBC has developed and operates a comprehensive video tape delay centre in Calgary which ensures that the uniform time release program schedule is achieved throughout the various time zones in our vast Prairies, Mountain, and Pacific areas during both Standard and Daylight time periods.

Uniquely, the Canadian Television Network (CTV) does not itself have any production facilities but it leases these from its member stations, however CTV does have extensive

equipment to run "packaged" programs and to integrate commercial messages and announcements.

To comply with the different time zones across the country, CTV established delay centres at Toronto for Winnipeg and at Calgary for Regina, the Mountain and Pacific time zones. The tape delay centre facilities at Calgary are obtained on a contractual arrangement with the telephone common carrier.

## 2.7 CATV SYSTEMS

A community antenna television system (CATV) can be described simply as the linking together, via coaxial cable, of a large number of television sets to receive television signals through a common antenna or antennae. Thus it is made possible for each subscriber connected to the system to receive generally the same quality of reception, regardless of the location of his home but the quality is no better than that of the signals as received at the distant head-end receiving antenna.

According to the Statistics Canada, on August 31, 1969 there were 400 licensed CATV systems in operation in Canada; the total capital investment of the CATV industry was \$102,380,865; and the payroll for 1601 employees was \$9,118,650. This compares with the following

figures as of August 31, 1968: Total 377 systems; total capital investment \$98,340,476; and payroll for 1367 employees, \$6,940,514.

The antennae for a CATV broadcasting receiving undertaking, which receives FM signals also, consists of arrays erected on sites selected for their suitability, taking into consideration the problems in receiving the particular (signal(s) sought. This installation is usually referred to as the head-end. There may be more than one head-end. The signals are then passed by cable or microwave to a distribution and control centre. At such a centre there is often also studio and control equipment for locally originating programs as well as for status monitoring of other services that might originate at different points in the system. The signals are then fed into the main or "trunk" cable which carries them from the distribution centre throughout the community. At various points along the trunk, branch lines or sub-trunks are connected to feed the signals to "distribution cables" which pass by the homes and apartments etc. to be served. The customer's TV and FM receivers are connected, as required, via "tap off" devices to the distribution cable by small diameter cables called "drop cables".

Cables are ordinarily routed via telephone or electrical company aerial pole and underground duct routes, and occasionally are buried in separate trenches. The distribution cables are always routed via the streets, service lanes or rear lots easements to give access to the homes to be served.

Amplifiers are required at the head-end and throughout the system to maintain the strength of the signals carried in the cables. The amplifiers are located on poles where the plant is aerial, in manholes where the plant is in underground ducts, and in pedestals or concrete vaults where the plant is buried. There is a limit to the extension of trunk or distribution lines, by the addition of more amplifiers and cable, such limit being determined by the maximum tolerable degradation permitted for the system.

The facilities of a CATV system have many potential benefits in a "wired-city" concept. It is possible with CATV to obtain a high quality picture, free from the noise and ghosts that can occur with individual home off-the-air reception in densely built up areas of cities. The system is able also to deliver selected local programming to meet special requirements. Further, FM radio or FM stereo radio and even AM radio signals may be

carried at a very reasonable cost per channel. Because of the cable's broad frequency spectrum, it can carry many other services such as data transmission, educational programs, surveillance systems, etc. which can be incorporated into a CATV system. These are discussed in greater detail later.



### 3. TYPICAL BROADCASTING SERVICES (SOFTWARE)

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#### 3.1 BROADCASTING TRANSMITTING SERVICE

##### 3.1.1 Private Broadcasters

Broadcasting means programs and to an audience, programming is equatable with service. The nature of service by radio and T.V. stations differs to the extent that each fulfills a different audience need. Within the range of broadcasting stations, it is the A.M. radio stations that most noticeably adjust the character of their service deliberately to meet what they feel are audience interests. If one canvassed radio stations from coast to coast, talked to management and interviewed listeners, it would become immediately apparent that A.M. radio in the past fifteen to twenty years has consciously developed into a speciality medium. One finds certain stations emphasizing "country and western" entertainment. Others describe their desired audience as not-older-than thirty and pin-point programs accordingly. To a third group of stations it is the thirty-year old listener who is at the youngest level of the age spectrum. Some expect to find an all-news format emerging shortly in order to fulfill another type of audience interest.

To reach and hold the desired audience private A.M. stations have developed a characteristic sound reflected by music and announcers. Recognition of a station by an audience depends on a distinguishing guise. Success, measured in size of audience, varies with the acceptability by the target audience of that guise. The larger the community, as a rule, the more specialized a given approach may be.

Regardless of the size of community, audience participation programming is the most dramatic innovation that A.M. radio has developed in recent years. Variouslly termed "open-line", "hot-line", "phone-in" and other variations on the same theme, this format has made it possible for a community to express its many shades of opinion, and to become better informed. These programs have become discussion forums for subjects as diverse as fishing and mental health and the needs of families. Recently a Canadian broadcaster was recognized internationally for outstanding achievement in developing public understanding of family service.

However the product of a broadcasting station is not only programming in the strict sense but also community service. While programming may mean airing programs on developments in the federal and provincial legislatures, on topical charity and community drives, on major local events, etc., community service means making time available for free public service announcements for heart funds, for blood drives, for united appeals and other activities of interest to the community.

It means establishing, staffing and running announce and technology courses for would-be radio and television broadcasters from the ranks of high schools and universities. It means fostering the development and use of Canadian writers, announcers, producers, musicians and broadcasting executives. Perhaps more than any other thing it means involvement by management and staff in the community which their station serves. Every civic minded business

and industry leads a corporate hand to the needs of its community but none is as much a part of the local scene as a broadcasting station; perhaps for that reason from no other single group is as much expected and regularly given.

Not all of such services and programs are donated and broadcast by each radio station in Canada. None the less the foregoing is representative of the combined services of broadcasting undertakings across the country.

As impossible as it may be to describe an average or typical A.M. or F.M. radio station, it is only slightly less difficult to talk of a representative T.V. station. In the private element of the system there are three categories of television stations: CBC affiliates, CTV affiliates, and independent stations.

The weekly programming of a CBC affiliate (English and French) is divided roughly into network commercial, network sustaining, and local programming most of which is commercial in nature. The latter combines syndicated shows, feature films and locally - or regionally - produced programs. The number of program hours broadcast by CBC affiliates usually is constant per station but varies from station to station, as is the case with all stations regardless of network affiliation.

Over and above the network option time of the CBC affiliate, it is to a large degree up to negotiation with the Corporation as to the additional sustaining hours of programming carried from the network. It is, of course, the objective of the CBC to have as much

of its national service as possible carried by its television or radio affiliates.

Although, there is no such thing as an "average" CBC or CTV affiliate, it may be helpful to refer to ranges. For example, English-language CBC affiliates during the peak viewing seasons range from slightly more than 100 broadcast hours per week at the lowest to 120 or more hours per week at the highest end of the scale. Among French-language affiliates the average is marginally lower. Of this weekly broadcast schedule, 48% of the time is devoted by English-language CBC affiliates to local programming of which an average of 24% or more are programs of purely local-regional content and origination. Among the smaller French-language affiliates, who appear to carry more of the complete CBC schedule than their English-language counterparts and in whose communities there is less selective advertising and correspondingly fewer selective programs, there is a higher proportion of local-regional programming. The number of hours of strictly local-regional programs, however, is about the same in English and French.

The weekly schedule of CTV service during the 1970 broadcast season amounts to 49 hours 10 minutes and divides into three categories. The Network Sales Time Programs total 25 hours 10 minutes of service which is scheduled simultaneously by each CTV affiliate. An additional 16 hours 30 minutes of programs are distributed via microwave to the member stations who schedule and sell advertising time within these programs on a selective basis. The third group of programs is delivered on tape and "bicycled" from station to station.

Again, these programs are selectively scheduled by the affiliates. As with CBC affiliates, the balance of the CTV affiliates' program schedules include local and regional productions, selective programs not otherwise carried on or distributed by the Network and other programs exchanged between CTV affiliates.

A few observations should be made on the CTV network as distinct from its affiliated stations. As a network entity, CTV contracts with the common carriers for microwave interconnection between affiliated stations. It performs a similar function for and at the request of individual affiliates, to secure microwave facilities from a mobile location, such as a football stadium, to the station for commercial integration and origination to the network. Certain network programs are produced by affiliated stations and originate from their stations. Others are produced by CTV personnel using the facilities of the member stations.

One of the more important functions for which the affiliates depend on the network is the acquisition of network programming. In the development of the CTV network this has assumed two aspects: program purchasing and program development. Particularly in the latter aspect by combining Canadian talent with foreign investment, the CTV network has added a new dimension to the breadth of broadcasting services.

### 3.1.2 Canadian Broadcasting Corporation

The following description of the CBC's broadcasting service is based on the "Submission by Canadian Broadcasting Corporation to the C.R.T.C. re Licensing of Networks April 14, 1970".



It is easy to think of the CBC as being coextensive with the television or radio service in English or French that one ordinarily receives and to forget that the Corporation provides, not one or two broadcasting services, but six: five domestic\* and one international.\*\* Thus, the CBC has domestically, a French television service; an English television service; a French AM radio service; and English AM radio service; and an English FM radio service (plus a single French FM station).

The description of these as five services, rather than five networks is deliberate. The CBC network pattern is much more complicated than it appears. The complexity is a response to the broadcasting needs of Canadians as they have become evident over the years and as the CBC has tried to meet them. CBC networks (FM excepted) subdivide and recombine constantly in response to the changing demands of geography, of time zones and of audience groupings. A reasonably complete list of CBC networks would be as follows:

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- \* A videotape distribution service is currently providing 4 hours of delayed television programming to 16 remote and northern unconnected television transmitters. They will be connected to the live domestic TV program service by satellite in late '72 or early '73.
  - \*\* The CBC International Service Broadcasts via shortwave in 11 languages to six key areas of the world over 3 existing 50 kw transmitters from Sackville, New Brunswick. This plant is being extended by five 250 kw transmitters which will be fully operational by 1972.

- (1) National Television network (French) including the  
Maritime regional television network (French).
- (2) National television network (English) including the  
Newfoundland regional television network (English);  
\*the Maritimes regional television network (English)  
the Central (Ont. and Que.) regional television  
network (English);  
\*the Prairie regional television network (English);  
the British Columbia regional television network (English)
- (3) National AM radio network (French) including  
the Maritimes regional AM radio network (French);  
the Ontario regional AM radio network (French);  
the Manitoba, and B.C. regional AM radio networks (French)
- (4) National AM radio network (English) including  
the Newfoundland regional AM radio network (English);  
the Maritimes regional AM radio network (English);  
the Central (Ontario) regional AM radio network (English);  
\*\*the Prairie regional AM radio network (English);  
the British Columbia regional AM radio network (English);  
\*\*\*the Northern Service "Mackenzie" regional AM radio  
network (English);

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- \* The regional TV networks occasionally subdivide into their provincial components.
- \*\* The regional radio networks occasionally subdivide into provincial components.
- \*\*\* The Northern Service also provides a shortwave programming service daily to the north of Canada in French, English and Eskimo via Sackville, N.B.

the Northern Service "Yukon" regional AM radio  
network (English);

the Northern Service "Ungava" regional AM radio  
network (English).

(5) FM (tri-city) radio network (English).

The Northern Service, though CBC have grouped it here with the rest of their English AM service and though it takes much of its programming from that service, has many claims to be considered separately as a sixth domestic service of the CBC.

The member stations of all the 21 networks enumerated above may be found in Appendix A of the CBC submission to this Telecommission Study.

### 3.2 BROADCASTING RECEIVING, INCLUDING CABLE DISTRIBUTION

Broadcasting receiving undertakings (CATV) today provide a strong link between the broadcast transmitter and the receiver - a link without which the alternative of direct reception of the broadcasting signal is often unsatisfactory or unpredictable.

Physical features can seriously affect the signal on its journey from the transmitter antenna to the receiver's antenna terminals. Tall buildings, towers, bridges, and churches etc. cause multipath reflections and create signal "shadow areas", where the signal is subject to interference from vehicles, power devices and aircraft. Cities and towns a long way from the transmitting antennas receive only weak signals and in consequence noise may be apparent on the screens of TV receivers.

Conventional broadcasting systems and their engineers cannot economically alleviate these difficulties. This task fell to the CATV engineer and an industry was born. As discussed earlier each head-end is usually located where reception is free, as far as possible, of these physically difficulties and where distant signals are strong. By so doing the CATV system is usually able to provide a better selection of local and distant TV signals than is possible with the best home antenna installation. Indeed a CATV system may have several head-ends. The system is engineered to ensure that the signals received at the CATV head-end are distributed to subscribers with a minimum of signal degradation introduced by the system.

The number of channels of television and FM radio distributed by broadcasting receiving undertakings varies, and depends upon

approval being given by the Canadian Radio-Television Commission to distribute the signals which are receivable. The limiting factor in the number of channels which can be received from the CATV network is the capability of the customer's standard commercial receiver which currently is able to select a total of 12 VHF television channels. Consideration is being given to making available additional channels through the use of the so-called mid-band frequency range which could be received by means of a special converter unit attached to the standard television receiver. However before such additional channels can be made available a number of problems remain to be resolved. Similarly, the limitation on the number of FM radio channels is the ability of the customer's receiver to select one channel only in the presence of many others.

### 3.3 NON-BROADCASTING CABLE SERVICES

#### 3.3.1 Time and Weather Service

This service, provided over a television channel, presents up-to-the-minute information on time and weather. A meteorological station which includes a barometer, a thermometer, a wind direction indicator, a wind speed indicator, and accumulated rainfall indicator and a clock is installed at a favourable location. The instruments are grouped around a camera which moves so as to view each of the meters in turn. The picture output of the camera is fed into the system at the distribution center. Some systems also display the weather forecast for the next 24 hour period as an additional customer service. To accompany this video presentation some form of background music is often used on the sound portion of the channel.



### 3.3.2 Local Community Programming

As the network of a broadcasting receiving undertaking can be sub-divided it is ideally suited to serve the specific and differing needs of areas, municipalities, or national groups. Broadcasting receiving undertakings are being urged to serve smaller communities and to assist in giving "the faceless audience an identity"

Programs such as interviews with community personalities, and staff of local organizations are produced in studios generally close to the head-end or the distribution centre, while events at a "remote" location such as council meetings, high school events, ice hockey, track and field competitions, etc. are generally recorded on location and played back from the studio centre. Such limited local programming is being undertaken by a steadily increasing number of broadcasting receiving undertakings.

### 3.3.3 Educational Television

Some broadcasting receiving undertakings have dedicated a channel for use by the education authority of the area. The authority provides the program which the undertakings then distribute to schools.

At the same time, pursuant to a Governor in Council Direction to the CRTC effective March 19, 1970, the Commission may require, in the issue or renewal of a licence for a broadcasting receiving undertaking, that the licensee reserve at least one channel on its facilities for the use of a provincial authority for educational broadcasting.

#### 4. TYPICAL COMMON CARRIER SYSTEMS

##### 4.1 LONG HAUL (INTER-CITY) FACILITIES

The major telephone and railway companies of Canada, (the telecommunications common carriers) each own and operate extensive microwave facilities in Canada. These microwave networks have become the backbone of the Canadian public telecommunications long haul system. The systems extend to all major centres and pass through most of the inhabited areas of Canada in such a way that the basic plant may be extended to meet the future requirements of the telecommunications industry of the nation.

Radio channels provided on the microwave radio relay routes are capable of handling the signals necessary for the transmission of any class of information, including the broad-band signals such as used in television and data transmission or the narrow band data, voice or sub-voice data circuits which use only a small fraction of a microwave channel.

Microwave operating channel frequencies are planned and co-ordinated on a nation-wide basis to assure the best usage of assigned frequencies. It is necessary also that they be planned and co-ordinated with the U.S. and other countries to avoid interference with other microwave and communication satellite systems.

To protect against failure caused by catastrophic events, the long-haul facilities have been expanded geographically, to provide good diversification of routes; the equipment

has also been designed so that this re-routing can be accomplished by the application of pre-planned re-routing procedures. In addition, each leg of each route has its own automatic switching and alarm system that protects the working channels by switching in a protection channel without interruption of service.

#### 4.2 LOCAL (INTRA-CITY) FACILITIES

Today's local telephone plant consists of a cable and wire distribution system extending from all customers back to central switching offices. The central offices are in turn connected together by trunk cables and are connected to a toll office. The toll offices, whether they are automatic (DDD) or manual, are thence connected to the national toll facilities.

The present trend in the construction of local distribution systems is towards the use of more buried cable and the removal of overhead construction. Mechanical switching machines in central offices are being converted to electronic switching systems which very significantly improve the switching capability of local plant.

Broadcasters are important customers for local or short range facilities including microwave links, broadband cable links, land line links of various qualities, and VHF radio circuits.

NOTE: The CBC alone paid out in 1969/70 some \$12.4 million for long haul and intra-city distribution circuits.

5. TYPICAL SERVICES RENDERED BY THE  
TELECOMMUNICATIONS CARRIERS WITH  
PARTICULAR EMPHASIS ON THOSE OF  
INTEREST TO BROADCASTERS

5.1 NATIONAL AND REGIONAL NETWORK FACILITIES (AM, FM AND TV)

Telecommunications common carriers provide the long haul transmission facilities necessary for national and regional television and radio networks. It is their facilities that carry the AM, FM and TV program material produced or assembled by the originating station to the subscribing broadcasters for simultaneous transmission to the public through the broadcasting stations forming the network. Suitable switching, performance monitoring, and maintenance functions are carried out by common carrier personnel.

The common carriers' microwave systems provide national television networks from St. John's Newfoundland in the east, to Victoria, British Columbia in the west, serving both the Canadian Broadcasting Corporation and CTV Television Network Ltd. Similarly, some 24,000 miles of circuitry both micro wave and cable are furnished by the common carriers to link up approximately 340 radio stations comprising the CBC Radio Networks. Private radio networks much smaller in size are also served.

5.2 LOCAL LOOPS AND LINKS, MOBILE SERVICE

The telecommunications carriers also provide local loop facilities to the broadcasters for full time or occasional use. These loops are used to connect studios with transmitter sites and studios with other sites for special "on location" broadcasting. Program and supervisory circuits are provided. In some locations,

telemetering and control systems are provided between studio and transmitter sites over local loops. Broadcasters receive the above services for both sound and television signals.

The telecommunications carriers also provide "pick-up" circuits for television and sound on a short term basis for remote location-to-studio program feeds. Locations which broadcasters use frequently are usually prewired and, if necessary, video and/or audio loops are installed to some central location. Other mobile events are covered by use of portable equipment. The following is a tabulation of typical communication services provided by telecommunications common carriers to broadcasters in the form of local loops and links (wire and radio) for the transmission of Television, AM and FM programming:

Television

Studio Transmitter Links 7 GHz radio circuits,  
Remote rebroadcasting links 7 GHz radio circuits,  
Remote pick-up 7 GHz radio circuits,  
Standby land line 3 kHz audio bandwidth,  
Remote control land line DC pair(s),  
Remote audio broadcast land line 5 kHz bandwidth,  
Remote control phone land line 2.7 kHz audio bandwidth.

FM

Studio Transmitter Link Radio (Stereo) 960 MHz,  
Studio Transmitter Link Radio 450 MHz,  
Studio Transmitter Link Radio 150 MHz,  
Standby land line 3 kHz audio bandwidth,



Remote control land line DC pair,  
Stereo Left Channel program and Right Channel program  
land lines 15 kHz audio bandwidth.

AM

Studio-Transmitter program land line 8 kHz or 15 kHz  
audio bandwidth,  
Remote control commands and indications Class C land line,  
Remote VHF receiver program line 8 kHz audio bandwidth,  
Remote Program Lines 5 to 8 kHz,  
Miscellaneous Land Lines for news gathering.

5.3 CABLE CHANNEL SERVICE, POLE ATTACHMENT RENTALS, ETC FOR CATV

Currently there is a variety of arrangements under which services are provided by the telephone companies to CATV operators. Some of the telephone companies have granted pole attachment rights for the installation of operator-owned cables, subject to safeguards designed to protect the physical integrity of the telephone plant. Other telephone companies have preferred to own the cables and lease them to the CATV operators, generally on the basis of negotiating agreements under which the operator bears a substantial proportion of the cost of installing the required cable facilities. The trend in thinking among the telephone companies now is that they would prefer to own all the hardware and lease channel space to the CATV operator, and thus promote the Wired City concept where CATV operation would be just one aspect of use of an integrated telecommunication system in which all users would lease channel space. Carrier companies, in rendering this type of service, usually refuse to

grant pole or duct rights for the placement of separately-owned cables.

The contracts entered into by the phone companies and the CATV operators often contain restrictions on the uses which the latter may make of the cable facilities. Typical of such restrictions are prohibition against resale of spare channel capacity to third parties and two way switched communications. In placing restrictions of this nature in the contract, the phone companies are endeavouring to protect themselves from future competition by the CATV operator. The CATV operators consider all such restrictions as being inimical to their own interest and that of the public.

#### 5.4 OTHER OFFERINGS BY COMMON CARRIERS FOR CATV

The carriers generally stand ready to provide the CATV operators with any service which is based on the establishment and maintenance of communication hardware. This could include the head-end, the wide band (usually microwave) transmission facility for connecting the head-end to the city cable system, studio equipment of all types, mobile units, etc. To a large extent these service offerings resemble those that the carriers provide to the broadcast transmitting industry.

#### 5.5 MAINTENANCE SUPPORT, ETC.

The telecommunications carriers will undertake performance supervision and maintenance of broadcasting equipment on request. This is done for low power radio transmitters on the CBC radio network.

Special services are provided to the CTV network. For example, in Calgary, the telephone company owns and operates the TV program delay centre for this network. Telephone personnel also operate some "frontier" services under contract at the request of the CBC. In general, the telecommunications carriers are prepared to provide a wide variety of special communications hardware and services to broadcasters.

## 6. FUTURE DEVELOPMENTS

### 6.1 TELESAT CANADA FACILITIES AND SERVICES

#### 6.1.1 Introduction

In September 1969 Telesat Canada was established as the entity in Canada to provide commercial communication facilities within Canada using space satellites. The initial entry by Telesat Canada in this field is expected to be towards the end of 1972, when its facilities will be used primarily to provide for the extension of television to the more remote areas in Canada for the improvement of existing television network facilities. In addition to this the initial system will be used to provide Arctic and East-West telephone facilities.

#### 6.1.2 Description of Initial Satellite System

The first system being implemented will use one geo-stationary satellite which will have a minimum of 12 radio frequency channels operating in the 4 and 6 GHz frequency bands. Plans have also been made to have available a second satellite which could be used in the event of failure of the first satellite or which could be available to carry additional traffic, including television. To meet future demands, further satellites will be made available as required. The initial use foresees the Canadian Broadcasting Corporation and Common Carriers leasing entire r.f. channels in the satellite, and the necessary earth stations. Since the satellite can be viewed from practically all of Canada, TV service can be made available to a broadcasting station simply by the

provision of a suitable earth station and interconnecting link. A significant advantage is the ease with which remote and inaccessible locations can be served compared to present day terrestrial means.

#### 6.1.3 Initial Television System

At the start of the system's operation, television facilities in the form of three channels will be leased to the CBC to provide an extension to their services in the French and English languages, largely to areas where it would be difficult and uneconomic to extend terrestrial systems. Initially, there will be approximately 25-30 remote communities served by this means. A further expansion of this service to the more remote areas is anticipated.

In southern Canada, Telesat Canada will integrate transmission channels with the existing CBC television network. Initially transmission and reception will take place from Vancouver and Toronto to five network-quality television receiving earth stations, at Edmonton, Regina, Winnipeg, Halifax, and St. John's Newfoundland. Later these receiving locations can be equipped for transmission to the satellite by simply adding a transmitter.

#### 6.1.4 Service Features

A satellite system offers many unique features attractive for television distribution. For example a single r.f. channel can carry a colour or black and white video signal, one or more high quality audio signals and cue and control signals which can be used by the broadcaster for remote control of the distant earth station receiver and its associated transmitter. The remote control facility



would also enable the broadcaster to select, for the remote broadcasting station, specific satellite channels and by so doing one of the several programs being handled over the satellite. By means of satellite, a television channel can be delivered to any number of locations using only one r.f. channel. The quality of performance is independent of distance. The bi-directional transmission capability of a satellite also facilitates program switching without interruptions.

#### 6.1.5 Future Developments

In addition to the services which have been described, it is anticipated that future developments in satellite communications will be of particular benefit to television distribution. Increases in the power available from satellites could dramatically reduce the size and complexity of receiving earth stations and eventually could lead to direct home reception. The use of frequencies in the 12 GHz range and above, exclusively by satellites, would permit earth stations to be located in cities near broadcasters' studio facilities, thus reducing the need and cost of terrestrial microwave radio relay facilities now required for connecting the earth receiving station to the broadcasting installation.

#### 6.2 THE BROADCASTERS' VIEW OF SATELLITES

The private broadcasters presume that the initial service which might be provided through satellite will be in the nature of an equivalent to the present public carrier microwave system i.e. a distribution system to communities. Should such be the case, they feel that appropriate channel capacities should be available for private broadcasting station use. The CBC's first rental will be for three channels.

With regard to direct-to-home broadcasting satellite service the private broadcasters believe that coverage parameters should (a) provide service to cities as well as rural and frontier areas, (b) provide for competitive services, and (c) provide for time zone differences. They anticipate that direct satellite-to-home FM broadcasting could come first and wish to be assured of an opportunity to share in the provision of this and the TV satellite broadcasting services that will follow in the more distant future.

To meet their objectives they consider that any broadcasting satellite must have a multiple channel capacity, so that within the channels designated for private broadcasting there would be sufficient for a competitive service. This would apply to direct-to-home FM radio and TV broadcasting. In the case of TV they see a requirement for an absolute minimum of 16 program channels, but preferably 20, reserved for private use (French, English competitive including coverage in four time zones).

It is necessary that there be provided, in due course, answers to the possible sub-allocation of some of the present UHF channels for use in this direct-to-home service.

Canada and Sweden worked together on a paper which was submitted to the United Nations Committee on the Peaceful Uses of Outer Space regarding the technical, legal and programming problems associated with direct broadcasting from satellites and possible solutions. An Interim Report has been accepted by the Committee and further work is expected in the coming months.

There has recently been concluded, between the Department of Communications and NASA, an agreement to build and launch an experimental satellite designed to establish the technical feasibility for direct or community type satellite broadcasting.

6.3 LIMITED COMMON CARRIERS AS FOUND IN THE U.S.A

The private broadcasters are concerned about the licensing of privately owned microwave link facilities especially for feeding TV rebroadcasting stations. Extensions of broadcasting services are part of CRTC requirements but broadcasters say they have been frustrated in meeting these requirements because they have been denied the right to establish connecting transmission systems of their own at this time for this purpose.

Consequently, they feel that the present policy should be modified in the future to permit broadcasters, either by forming a company operating as a limited carrier or by direct ownership on their own behalf, to establish and operate links between originating stations and rebroadcasting stations. Services provided by limited carriers would have to be economically priced, and not beyond the normal limits that broadcasting stations might be able to afford in their operations. Recognized performance standards would have to be met.

A position on this matter has been taken by the Canadian Broadcasting Corporation in its various applications for the inter-connection between some of its main transmitters and satellite low or high power stations to extend the primary coverage of these.

In many instances, the Corporation has found it more economical to apply for its own microwave facilities, particularly where a limited number of "hops" is involved. The preference is to own and operate these links.

The telephone common carriers are of the opinion that Canada cannot economically support limited telecommunications carriers such as those existing and proposed in the U.S.A. They say the "inevitable result of such systems would be to make customers of the existing telecommunications carriers subsidize the uneconomic operation of facilities which would not be used to full advantage."

#### 6.4 SPECIAL CABLE SERVICES AND OTHER DEVELOPMENTS

The Canadian Cable Television Association (CCTA) foresee major developments in the use of cable systems of the type their members already provide for CATV. They see overcrowding in urban areas as a serious problem for the future that may be resolved, partially at least, through the provision of new services by cable. This would make possible a reverse flow of people from city to country. Using such cable services, some business occupations as well as banking and shopping may be conducted from the home; mail and newspapers would be delivered electronically, by facsimile apparatus; remote meter reading and property protection

could be handled from a central point; and information retrieval and education, etc. would be revolutionized in line with what is becoming the much discussed concept of a "wired-city". The following describes some of these future coaxial cable services as foreseen by the CCTA:

Educational Television - Already schools in some cities in Canada are being forced to operate on a shift system to accommodate the number of pupils registered in the insufficient facilities available.

The use of channels expressly for school broadcasts would enable students at school and the overflow group at home to view the same lesson and avoid the need for shift study. It would also enable first class educators and professors to be the instructors for a multitude of pupils but all would relate closely to the professor. It has been argued that instruction via television is a superior substitute to instruction in large auditoriums or by means of films. Modern television equipment and techniques enable the professors to demonstrate using sophisticated equipment to which individual classes would not otherwise have access.

Parents would be able to take evening instruction using the same facilities that the younger members of the family use during the day.

Information Retrieval - The rate of knowledge acquisition in the scientific and technological areas is so great that the industrialist is unable to keep pace with developments, even in a limited field, via the trade journals and study courses. Dimensions which are accepted at the beginning of a



semester are today far out-dated before the end. Advances in manufacturing techniques are announced with ever increasing frequency.

If the population explosion is linear in its rate of increase, the knowledge explosion is exponential. Speed reading courses offer a temporary solution, but the long-term solution is the assembly of computerized knowledge banks from which information in specified areas can be drawn. Since a computer memory must be accessed electronically, and the knowledge can be made available electronically, the use of a network facility to provide a link between the user and computer is a realistic new service concept.

Facsimile - The ability to record information related by cable to a receiving point already exists in some business activities. With improved information retrieval facilities this need will be in demand in more locations. In time, homes, schools, and colleges, as well as businesses, will look to computerized information banks to fill their needs for complete and current information. The use of these banks combined with facsimile facilities will come to be the accepted method of gathering facts, outdating the present library search technique. This will relieve congestion of the library, frustrations and delays because a reference volume is not available, and will result in more current information being made available in a shorter time.

Electronic Mail & Newspaper Delivery - Facsimile equipment

in the home may also be used to print out messages, newspapers and mail, all relayed to the user's address via a central point. The estimates of the daily mail movement by 1980 indicate conclusively that the physical handling problems of sorting and trucking will be enormous and electronic routing of electronic messages may well be essential to facilitate mail flow.

Meter Reading - The gas, water and electrical utility companies have expressed an interest in being able to electronically read meters in households from a central point - thus avoiding the considerable labour cost involved in using inspectors for this purpose.

Alarms - It has been proposed that fire, burglar, and other alarms be fitted in homes and connected to the cable network so that appropriate alarm trip indication would appear at a central location, showing the nature of the alarm and the address.

Credit Cheques and Banking in the Home - By the close of this decade it is expected by CCTA that the use of credit cards for all purchases will be almost universal. Credit cheques and charges will be carried out directly from the retailer's cashier to the customer's bank computer. It is thus possible that trips to banks will become unnecessary and all transactions could be done from the home.

Shopping in the Home - To reduce the need for travelling on congested accident potential roads and visiting stores congested with other shoppers, some facility to enable the purchase of items shown on a home television receiver will be provided.

The Canadian Cable Television Association considers that wide band network capabilities may be able to serve usefully third party business where unused frequency spectrum can be made available on the cable. The rate to be charged for the use of the cable spectrum space will be determined by mutual agreement or by regulation. This matter is considered in section B, sub-section 3, of this report. However, CCTA also recognizes that more channels will be required and anticipate technical changes, particularly in cable and amplifying equipment, to make possible an increase of channel handling capacity.

To provide these communication facilities of the future the CCTA support the idea of two principal networks: the broad-band or CATV type network and the narrow band telephone type network. The first would provide a one-way service from a centre to each individual subscriber, a group of subscribers, or all subscribers simultaneously, with a limited amount of two-way communication from each subscriber to a central point and would include TV, FM and ETV broadcasting, shopping, surveillance of traffic and crime, selected audience programs and stored TV. The telephone type network would provide discrete-address-to-discrete-address communications such as telephone service, picture phone service, voting, banking, meter reading, burglar and fire alarm service. Suitable for both

networks would be the provision of services such as facsimile, library books and computer communications and it is recognized that some services would require interfacing of the two networks and, perhaps, the interconnection of facilities.

The Association feels that such a division of activities in the communications field is supported by both the Rostow and the EIA reports which were prepared on the basis of contributions from experts in the U.S.A.

The telephone common carriers expect that future development, in so far as wide-band local distribution plant is concerned, will be in the direction of an "integrated-use" type of plant. In promoting that viewpoint they have in mind the "wired city", in which some services, described earlier under future coaxial cable services, will require switching such as the "video-phone" while others may be of a point-to-point nature. The carriers feel that the transmission and switching functions for these services, and for that matter the two-way services generally, probably can be most economically integrated with the primary offerings of the telecommunications carrier.

The common carriers consider that they have the technological experience and knowledge stemming from years of satisfactory provision of cable facilities and expect to continue to develop new cable facilities. They can provide service on the most economical basis using the full range of technology because they

have established rights-of-way pole lines and ducts and can add capacity to look after this need.

The private broadcasters expect that special cables may be developed which would provide studio-transmitter links for distances up to 25 miles. It may be that the common carrier will be in a position to provide such service to broadcasters, or, alternatively, broadcasters may be prepared in some instances to establish their own buried cable facilities.

It is the view of the private broadcasters that future developments will not limit "through-the-air" broadcasting as now conducted, but will in fact call for a greater expansion of such facilities. They note the need for extension of broadcasting throughout the rural and remote areas, and that UHF channels would be available for this purpose pending the feasibility of satellite-to-home broadcasting.

The CBC believes similarly that the development of coverage in remote areas, in which it is extensively involved particularly in the North, will continue to be through terrestrial broadcasting facilities, i.e. transmitters. There is one other aspect that should be considered in the case of the CBC. The public broadcasting service could not, it is argued, provide its programming to those restricted by subscription to a CATV system. The service must be free on an "off the air" pick-up basis as well as being available through CATV systems where they exist.

A number of very significant developments in radio and television techniques are expected in the next few decades. It is expected that a major effort will be made to reduce the bandwidth



of transmissions in the AM, FM and TV services. This will appreciably diminish interference caused by transmitters on adjacent channels and release new channels for reassignment, thus enabling the spectrum to accommodate more stations. The use of single side-band modulation offers prospects of genuine improvement in the reduction of the bandwidth of stations in the AM band. In North America the FM band is only lightly used. It may be that sound broadcasting will eventually move from the AM band to the FM band because of the more favourable characteristics of propagation and FM technology. Only then will the pressure to reduce bandwidths in the FM spectrum be felt. A great deal of research work is being done to reduce the bandwidth required for transmission of television pictures. The main effort is centred on attempts to reduce the redundancy in the information presently transmitted for TV.

The miniaturization of electronic equipment is leading to extensive automation. Even now some radio stations have automated program transmission and it is expected that this will increase in the future. Following on the miniaturization of equipment, we can expect to see the stereoscopic reproduction of television pictures become a reality. Also, we can expect to see improved methods for the storing of television pictures which will facilitate home recording and, more particularly, the handling of TV pictures by broadcast stations.

## 6.5 A BRIEF REVIEW OF THE LEGAL SITUATION

### 6.5.1 Constitutional Considerations

The primary observations regarding the relationship between the functions of the common carriers and those engaged in broadcasting, in the context of the BNA Act, is that whereas broadcasting is within the exclusive jurisdiction of Parliament, common carrier operation falls partly under the federal and partly under the provincial jurisdiction, depending mainly on whether or not the undertaking of the company extends beyond a province.

The exclusive federal jurisdiction in the field of broadcasting, as a form of radiocommunication, was confirmed by the 1932 Privy Council decision in the Radio Reference case upholding a judgement of the Supreme Court of Canada. Their Lordships concluded, in that case, that broadcasting is an indivisible undertaking which requires reception as well as transmission, and which is not complete until the signals have reached the ears of those persons for whom they are intended.

This principle was developed in the Victoria Cablevision case in which the B.C. Court of Appeal held that a CATV system from head-end to home receivers, including all intervening cables and apparatus, constitutes a unified undertaking subject, exclusively, to federal jurisdiction. This concept of a unified broadcasting receiving undertaking was embodied in the Broadcasting Act of 1968.

The divided jurisdiction existing in relation to common carrier companies has created a lack of uniformity of legislation and of approach to regulation across Canada. Broadcasters particularly find this lack of uniformity inconsistent with the high degree of uniformity of broadcasting legislation. The constitutional and legal basis for federal regulation of certain carriers under sections 91 and 92 (10)(a) and (c) of the BNA Act is reviewed in Telecommission Study 1(a). This study also reviews the provincial jurisdiction arising from section 92 (10), (13) and (16) in respect of other carriers in the same manner as for intra-provincial railways, bus lines and pipe lines.

Another source of lack of uniformity in the overall common carrier regulatory picture is the situation that exists where the facilities of an intra-provincial common carrier company involves radiocommunication. Such a company and its undertaking, having been provincially created, is subject generally to provincial regulation but to the extent that it uses radiocommunication is also subject to federal regulation.

6.6 EXISTING LEGISLATION - BROADCASTING ACT, RADIO ACT,  
RAILWAY ACT, PROVINCIAL ACTS AND MUNICIPAL BY-LAWS

- 6.6.1 Broadcasting Act - The present Broadcasting Act, s.c. 1967-68, c.25 has its origin in the Canadian Radio Broadcasting Act, s.c. 1932, c.51. This latter Act, in the context of its power to "regulate and control broadcasting in Canada", s.8, and "to carry on the business of broadcasting in Canada", s.9, had its origin in the Aird Commission of

1928. That Commission was concerned with the growing saturation of broadcasting reception in Canada from U.S. stations and a fundamental belief in the role of the broadcasting for fostering Canadian unity and consciousness. In order to achieve these aims, the Canadian Radio Broadcasting Commission was constituted under the Act of 1932.

Subsequent Acts, namely the Canadian Broadcasting Act, s.c. 1936, c.24, and the Broadcasting Act, s.c. 1958, c.22 proceeded in much the same spirit except that the Act of 1958 separated the regulatory function from the public broadcasting service by creating the Board of Broadcast Governors.

The Broadcasting Act of 1967-68, enunciates, in section 2, a broadcasting policy for Canada and, while continuing the CBC and declaring broad policy objectives for the "national broadcasting service", declares that the broadcasting policy can best be achieved by providing for a "single independent public authority" to regulate and supervise the Canadian broadcasting system, i.e. the totality of broadcasting in Canada comprising the public and private elements. Under Part II of the Act the Canadian Radio-Television Commission is established for this purpose, providing in section 15 for the Commission to exercise such regulation and supervision subject to the Act and the Radio Act, and any directions that may be given from time to time by the Governor in Council in regard to such matters as are specified in the Act.

The powers of the C.R.T.C. fall basically under two headings: the power to make regulations and the power to grant licences. Section 16 of the Act sets out the scope of the Commission's power to make regulations of a wide variety. Sections 17 and 24 give to the Commission the power to issue, renew, amend, suspend or cancel licences. Section 18 provides that the CRTC may hold a hearing on a complaint by a person concerning any matter within its jurisdiction. The CRTC exercises discretionary power in the issuance of licences, and may attach conditions appropriate for implementing the broadcasting policies enunciated in the Act.

Section 22.(1)(b) of the Broadcasting Act provides that no broadcasting licence shall be issued, amended or renewed unless the Minister of Communications certifies to the Commission that the applicant has satisfied the requirements of the Radio Act and regulations and has been or will be issued a technical construction and operating certificate under that Act with respect to the radio apparatus that the applicant would be entitled to operate under the broadcasting licence applied for or sought to be amended or renewed. Section 22 further provides that a broadcasting licence is of no force or effect if it is issued, amended or renewed in contravention of this requirement. Also, during the period that a technical construction and operating certificate is suspended or revoked, the broadcasting licence is of no force or effect.



6.6.2 Radio Act - Essentially this Act provides for the regulation and control of all radiocommunications, in Canada, by requiring that any person establishing a radio station or installing or operating any radio apparatus shall do so only under and in accordance with a licence and to the extent that a radio station or radio apparatus is part of a broadcasting undertaking for which a licence is issued under the Broadcasting Act, by requiring an authorization in the form of a technical construction and operating certificate. The Crown in right of Canada or any Province is bound by this Act.

The Minister exercises a discretionary power in the issue of licences and technical construction and operating certificates and may attach conditions as he considers appropriate for ensuring the orderly development and operation of radiocommunication in Canada. Within the generality of this authority, the Minister may take into account any aspect of the public interest in granting or denying a licence.

Apart from the authority to make regulations applying to radio stations generally, the Act, in section 2C, makes it mandatory that the Minister shall regulate and control all technical matters relating to the planning for and construction and operation of broadcasting facilities which include the facilities of broadcasting receiving (CATV) as well as broadcasting transmitting undertakings.

The Minister may make regulations, extending to such matters as classifying radio stations, prescribing the type of radio apparatus that may be installed, the frequency and power

to be used, the nature of the service to be rendered by radio stations (other than broadcasting), and prescribing general conditions applicable to each class of licence or technical certificate issued. He is required to negotiate and implement the terms of international telecommunications agreements; but in carrying out this responsibility he shall consult with the C.R.T.C. concerning such matters that, in his opinion, affect or concern broadcasting. The Minister also by regulation prescribes requirements for the qualifications and certification of operators at radio stations.

6.6.3

Railway Act - This Act is the principal regulatory vehicle for those common carriers which are subject to federal jurisdiction. Primarily, it requires carriers to obtain the approval of the Canadian Transport Commission for tolls and charges and the Commission must satisfy itself that in so doing such tolls and charges are just and reasonable and that the carrier does not make any unjust discrimination. The Commission's responsibility extends also to approving share issue, operating agreements between companies and supervising certain right of way matters. It does not extend to regulating the quality or standard of service. The private wire services of these carriers are the ones of greatest interest to broadcasters. They are now included in the Commission's jurisdiction by virtue of a recent amendment to the Act. It is too soon to know how this element of the regulatory power will be applied. The broadcasters view such regulation as being particularly important in the light of the present policy of the Department of Communications to limit the broadcasters right to install and operate their own microwave transmission facilities.

6.6.4 Acts of Incorporation - The various statutes under which most common carriers pursue their business can be significant to the subject here being studied. The Bell Telephone Act is of special significance. This Act empowers the company to render telecommunication services of all kinds except that the company may not directly or through its subsidiaries hold a broadcasting licence.

6.6.5 Provincial Legislation - Provincial legislation applicable to intra-provincial telecommunication carriers has been and continues to be of a basic regulatory nature. The legislation of all Provinces except Saskatchewan provides for a regulatory Commission quite separate and distinct from any provincial telecommunication carrier. Control ranges from a minimum requiring only the approval of construction and filing of rates, through to a maximum which include the regulation of rates, standards of service, extension of service, joint use of facilities, rights of entry and location of works, the interconnection between systems, the approval of agreements, franchises, mergers or sale of systems, and the formation of holding companies.

The regulatory legislation is directed primarily at ensuring basic minimum telephone service throughout the area or areas served by each company with the objective of ensuring broad public access to the service at reasonable rates. The legislation tends to be directed primarily at the services provided for general public use, and usually does not cover adequately a private wire service which is of greatest interest to a broadcaster. Thus, most provisions for appeal relate to telephone rates applicable in the broad use or public sense.

It should be noted however that there has been no significant demand for amendments to provincial statutes along the lines of the recent amendment to the Railway Act, 1969-70, c.20, providing for the regulation of private wire service, although conceivably some of the legislation as it now stands could be used for that purpose. Negotiations presently underway between various broadcasting companies and certain carriers indicate that substantial disagreements may arise with respect to proposed rates. In the light of the apparent absence of any recourse for appeal to a provincial regulatory authority on the question of private wire rates, amendments to at least some of the provincial legislation for that purpose would be welcomed by the broadcasters.

## SECTION B - SPECIFIC QUESTIONS STUDIED N.B.)

### 1. CONCEPTS HELD BY COMMON CARRIERS AND THOSE ENGAGED IN BROADCASTING AS TO THEIR TELECOMMUNICATIONS ROLES

#### 1.1 GENERAL

In order to understand better the views expressed in answering the questions dealt with under Section B of the Scope of Study, it is necessary to first look at the roles which each of the major industries feel they should play in Canadian telecommunication.

#### 1.2 COMMON CARRIER VIEWS

In the opinion of the common carriers, those engaged in broadcasting and the common carriers have separate and distinctive roles which are mutually exclusive. They see the former principally as a producer of program material and devoted to the task of providing a broadcasting service to the public. Furthermore they note that the CRTC on several occasions has made it clear that CATV operators while not "broadcasters" in the legal sense of the term, are indeed engaged in broadcasting.

On the other hand the common carriers see themselves as the providers of communications facilities, wherever and whenever such may be required, and they consider those carrying on broadcasting as legitimate customers for an communications service involving the transport of broadcasting program material or other information from one place to another.

The Trans Canada Telephone System (TCTS) notes that the Fowler Committee on Broadcasting, and more recently the CRTC, have

N.B. The views expressed in Section B are not to be construed as reflecting the views of the Telecommision.



stressed the need for improved programming and more Canadian content in Canadian broadcasting. This policy has been supported over the years by the Canadian Parliament. In contrast they recall that the Bell Canada Charter was amended recently to redefine the role of that company more clearly as a carrier with powers to provide any type of telecommunications service except that a provision was inserted barring it from holding a broadcast transmitting licence or a licence to operate a CATV system. The TCTS goes on to say that it was evident from the debate on that Bill, that Parliament sought to establish the principle that broadcasting and common carrier activities are two distinct functions which should be provided by separate entities.

While the common carriers accept that their normal role is to provide the technical facilities for the use of broadcasting undertakings, they consider that in certain circumstances they should be permitted to hold broadcasting licences.

### 1.3 CCTA VIEWS

It is argued by the CCTA that cable television companies have been primarily involved with hardware rather than software, the medium rather than the message, transmission rather than programming. Cable television is first and foremost a telecommunications service concerned with the reception and distribution of broadcasting television signals. Therefore the Association does not accept the arguments that a line should be drawn between programming and transmission, that the communications aspect of cable television should be left to the telephone carriers, or that the

cable operator should only function as a broadcaster. Indeed most CATV companies argue that if a line is to be drawn, they should be on the common carrier side of that line. The CCTA does not accept the view of the TCTS that Parliament sought, in dealing with the amendment to the Bell Canada Charter, to establish any principle that broadcasting and common carrier activities are two distinct functions.

At the urging of the CRTC some cable companies recently have become involved in local public service cablecasting. The CCTA feel that efforts to advance this activity will be frustrated by suggestions that transmission and programming should be the responsibility of separate entities. Moreover it is evolving that cable companies, in such instances, often are doing this by making their hardware medium available to community groups who provide the message. They feel that the suggestion that cablecasting makes cable companies programmers, and therefore suddenly unqualified to own and operate a communications network, will greatly jeopardize this new supplementary service. They consider that a hybrid concept should apply to the activities of cable operators, that is, a cable network should be viewed as a specialized telecommunications system where the operator's role is primarily that of a common carrier who also provides programming on a supplementary basis in the public interest.

1.4

#### BROADCASTERS' VIEWS

With the minor exception that broadcasters feel that in certain situations they should own their transmission lines, the relationship between the broadcasters and the common carriers does not present any serious conflict of interest.

The broadcasters stress their responsibility for fulfilling the Canadian broadcasting policy and the challenge that has forced them to maximize the capacity of radio and television facilities in the process of contributing to public information, enlightenment and understanding, and in extending broadcasting reception to all parts of the country. At the same time the broadcasters regard the mandate of the telecommunications carriers as that of making it possible for people to communicate with each other quickly, easily and economically. They say that the task of accomplishing this has been a major one for the carriers, and it continues to be so as new demands are made for more rapid and more sophisticated means of communication.

The broadcasters therefore view the roles and responsibilities of the broadcaster and common carrier as highly specialized and distinct and for that reason they oppose any move that would encourage the common carrier to become directly involved in broadcasting. They agree however that the respective functions are nevertheless inter-related, so that broadcasting cannot function without the common carrier. In the broadcasters' view each industry through experience has developed unique and valuable skills and expertise and each should confine itself to its own defined role.

The CBC viewpoint conforms pretty well to that of the private broadcasters in that it is not the business of the Canadian Broadcasting Corporation as a public broadcaster, which is in the business of producing and broadcasting programming under the requirements of the Broadcasting Act, to develop at the same time its own microwave network or indeed its own satellite. Here, the distribution

facilities on a point-to-point basis should continue to be the area of the carriers. There are of course many situations such as studio to transmitter links, the feeding of associated re-broadcasting transmitters and mobile unit connections when the individual broadcaster should be licensed to provide the microwave or VHF links. It is, axiomatic that in a country as large as Canada there will probably always be a need for a major distribution element in the broadcasting system, as well as a multiplicity of elements in the broadcasting transmitting aspect of this system. The CBC feels it is necessary to retain its identity with its transmitting facilities through ownership in order to preserve its image as providing a National Broadcasting Service.

2. THE EXTENT TO WHICH CERTAIN TECHNICAL  
FACILITIES SHOULD BE OWNED BY THOSE  
ENGAGED IN BROADCASTING, OR PROVIDED  
BY THE COMMON CARRIER.

2.1 INTRODUCTION

In this section of the study, two questions were posed:

- (a) what degree of ownership by those engaged in broadcasting is appropriate for national and regional networking facilities, broadcasting station to rebroadcasting station links, local links, CATV intra-city cable distribution facilities, and CATV network facilities; and
- (b) to what extent should the facilities be provided by common carrier and leased to those engaged in broadcasting.

Because of the relationship of the two questions they are dealt with together.

2.2 GENERAL CAPABILITY OF COMMON CARRIER TO PROVIDE FACILITIES

The common carriers state that they have developed a wide-spread system of telecommunications facilities and services of the highest available quality. They say these facilities are designed to meet the program transmission requirements of those engaged in broadcasting while at the same time being integrated with other facilities needed to meet the requirements of other users, in one common plant. They argue that with this approach they can optimize the use of communication resources such as the radio spectrum, as well as physical plant and technical skills.



The carriers emphasize that increasingly, long distance transmission will be carried by new and more sophisticated systems having an extremely high circuit capacity. New coaxial cable facilities and waveguide systems as well as new PCM microwave show promise of reducing the cost of long distance transmission by a factor of two or three. However the carriers feel that none of these systems will be economical unless a sufficient amount of traffic exists to justify the installation of such high capacity systems. They argue therefore, that a division of existing traffic between many parallel transmission systems could delay the introduction of modern technology in the national toll network as well as making impossible of achievement the economies available through scale which probably will be even more important in the future than it is today.

Telesat Canada say they soon will be in a position, as a carrier, to provide broadcasting network facilities. The CBC considers that satellite systems are particularly well suited to the needs of the broadcaster as the capability of the satellite system is less affected by geographic and demographic considerations. The capability of the satellite to transmit to the entire country or to any given area, simultaneously, provides the broadcaster with the means for transmission of programs both on a national or a regional basis. Telesat recalls that they will be providing services also to users other than the broadcasters. The earth stations will be suitable to meet combined customer needs. Telesat

will own these earth stations; and the company says this will allow better integration and co-ordination of the complete system and avoid duplication of capital resources and operating costs. The transmission and receiving facilities of Telesat will be available to the broadcasters on a commercial basis.

### 2.3 NATIONAL AND REGIONAL NETWORKING FACILITIES

The broadcasters agree that the common carrier should continue to provide national or regional facilities for the transmission of program material between broadcasting stations. They say it is obvious that the development of a broadcaster-owned network for the interconnection of broadcasting stations on a trans-continental basis would be economically impracticable for the broadcasting industry to undertake, and that regional networking facilities also can be provided by common carriers at a cost that cannot be matched through private ownership and operation.

### 2.4 LOCAL BROADCASTING LINKS, INCLUDING BROADCAST STATION TO REBROADCASTING STATION INTERCONNECTIONS

The telephone carriers consider that the ownership of equipment by broadcasters should be confined to the broadcast transmitter with its associated studio equipment, leaving to the carriers the provision of the various local links. They concede that while mobile pick-ups should also be available from the common carriers, such facilities could be provided by the broadcaster.

There is some difference of opinion here between the telephone carriers and CN/CP in that the latter would recognize that in certain circumstances the broadcaster might be better

able to provide more economically his own communication link facilities particularly where short distances are involved and where he can tolerate some reduction in quality by using a combination of broadcasting signal pick-up and microwave transmission. However, CN/CP recommend that the common carriers have the option to provide such facilities.

While the broadcasters agree generally that the facilities for national and regional networking of broadcasting stations should be provided by the common carriers, they consider that the situation is different when it comes to local links and the broadcast station to re-broadcasting station connections. These facilities almost always follow routes used exclusively by the broadcasters. Also, short distances only are involved; furthermore the broadcaster is often able to use his own towers and buildings. Therefore the position adopted by the broadcasters is that they would usually prefer to own this type of facility and that DOC policy should leave this option open.

Although the CBC position has been stated earlier, it is perhaps useful to recall it at this point. The CBC believes that the business of the broadcaster must be separated from that of the distributor and sees the common carriers as mainly distribution agencies. The CBC has no quarrel with the distribution agencies, i.e. the common carriers, providing major

network facilities such as those represented by long lines for radio network distribution, microwave and satellite facilities for television distribution, but does see a point where the broadcaster should be able to supply his own short link facility where he is connecting a mother station to a re-broadcasting station or indeed operating a normal studio to transmitter link or mobile unit to studio link.

The private broadcasters state that their position may be subject to re-examination if the common carriers, without exception, were supervised and controlled by a competent, fair and impartial referee to whom broadcasters among others could apply for the review of and binding ruling on such things as rates, technical standards, and liability for outages. The latter is of particular concern because of consequential losses in program revenue. In the opinion of the telephone carriers this whole proposal raises a major question of overlapping federal jurisdiction for common carriers operating under provincial jurisdiction; and they suggest there is no necessity for such a referee even if the jurisdictional difficulties could be surmounted. However, the TCTS considered in their submission to Study (a,b) the lack of a formal channel to dispose of customer complaints in inter-provincial service and the possibility of need for study to determine whether the lack of a complete structure for this purpose is likely to become a defect in the future.

The private broadcasters note that the Department of Communications since its formation, has tended to encourage the use of common carriers to furnish intermediate and long haul private microwave facilities. While they view this policy with some concern, they welcome its inherent flexibility which provides for the establishment of new microwave relays licensed to broadcasters and others, when adequate service cannot be obtained from the carriers on reasonable terms. They strongly support any measure that "will relieve the state of virtual monopoly presently in the hands of the common carrier".

2.5 INTRA-CITY CABLE DISTRIBUTION FACILITIES INCLUDING HEAD-END TO CABLE DISTRIBUTION SYSTEM

With respect to CATV intra-city distribution cable, the telephone carriers consider that ownership by their companies should be the normal arrangement. In their opinion, this would facilitate the development of the future intra-city total communications distribution network so essential to the Wired City concept. They view this concept as one in which it will be possible to avoid a multiplicity of telecommunications distribution and switching systems.

The CCTA considers the link from the CATV head-end to the cable distribution system along with the CATV intra-city cable distribution facility to be an integral whole. They assert that a CATV operator, as the holder of a licence for a broadcasting receiving undertaking, has responsibilities as follows:

- (a) to erect cable and provide service to a given area within a specified time period,



- (b) to meet the regulatory bodies' standards of technical performance, and
- (c) to operate within a stated rate schedule.

The CCTA considers that where a third party has any control of the construction, maintenance and performance of any of the total broadcasting receiving facilities employed by a CATV operator, the latter is effectively denied the right to assume the responsibilities laid upon him by the licensing authority.

The CCTA concludes that licensees of broadcasting receiving undertakings definitely wish to have ownership of their systems and emphasize that this arrangement gives the following advantages:

- 1) The broadcasting undertaking licensee can exercise full control over the construction and maintenance of the cable and all electronic components in the system and is therefore able to fulfill its accepted responsibility to the public and the licensing authority for the technical quality of the signals distributed.
- 2) The construction and the maintenance of the system is undertaken by staff dedicated solely to the system with no endeavour of higher priority to divert them from their principal task.
- 3) The operator is able to use the entire frequency spectrum available in the cable for whatever purposes regulatory bodies permit, without limitations of an arbitrary nature imposed by a third party having a competitive interest and who is not regulated by the broadcasting authority.

- 4) The cost of construction and maintenance of a system entirely owned by the operator does not include the overhead of a third operation which may be very high, and therefore the service is supplied to the public at a more favourable rate.
- 5) Since the rate of amortization of an erected pole is known and fixed, the rates charged by the telephone company pole contact privileges are not exposed to vulnerable areas of price increase.
- 6) The licensee company would be beyond labor and corporate disputes in which the telephone company may become involved.

#### 2.5.1 Separate vs Integrated Systems

The CCTA feel that telephone company control of television distribution systems would be contrary to the public interest because they would control the CATV companies' means of doing business and the latter then would be relegated to sales and collection organizations. The CRTC has said that this role would not be acceptable. On the other hand the TCTS see the Wired City concept as one in which all telecommunication facilities are provided by a single entity and as such being in the public interest because it aims at the reduction of a multiplicity of transmission and switching systems. They feel that there is no authoritative evidence against this concept and argue that the

telephone companies with their extensive technical resources would be better able to obtain a higher technical standard and better reliability than could be provided by many CATV operators.

While the TCTS favours strongly the integrated systems concept, they emphasize that it does not necessarily imply that all information is carried over the same kind of cables. Sometimes it may be practical to carry television data and voice communications over a common transmission system, while at other times separate transmission facilities would be used for different kinds of messages but with all facilities using the same right-of-way or being installed and maintained by the same organization. The telephone companies state that they have offered complete systems to the CATV operators but since only one has been accepted and tried they cannot agree to the CCTA statement that such systems have been proven to be technically, economically and operationally unacceptable.

The CCTA on the other hand feel that the single integrated communication system concept is not supported by proven benefits. They argue with respect to the TCTS' statement in support of "complete systems" that it was necessary in four instances to convert from "complete systems" to "partial systems" for such reasons as improvement of quality of service or picture quality and in one instance because of increased charges. They point out that the natural trend is toward two complementary types of communications networks developing in North America. One is a switched system with videophone type of capability evolving as an addition to the

present telephone network and the other is a predominately one-way broadband coaxial network evolving out of the present cable television systems. Because of these developments they feel there can be no supportable argument for having all communication services provided by the telephone companies and in fact they see many benefits arising from competition in the provision of facilities.

The CCTA argues that the Canadian cable television industry has been a leader in the field of broadband coaxial communications for the past 18 years and there is no justification for assigning this field of technology to the less experienced hands of the telephone companies. The telecommunications carriers challenge this on the basis of their long extensive experience in the design and operation of wide-band communications systems and contend that they have a strong engineering staff which carries out a considerable amount of research and development, both as in-house research and in their associated R and D laboratories. In the transmission field alone, these laboratories employ a full-time staff of about 700, one-third of which are engineers and scientists.

The CCTA notes that the cable industry already has designed and built, and is successfully operating a large number of broadband coaxial cable systems throughout Canada. They point out that the only involvement of the telephone

carriers in these systems has been to lease pole space, unreasonably retaining title to some of the cables which the CATV operators have paid for, and to place the cable on their poles in accordance with the CATV operator's design. The CCTA refutes the contentions of the telephone carriers that the common carrier ownership of intra-city cable distribution facilities should be the normal arrangement and that this would facilitate the development of intra-city distribution network in accordance with the "wired city" concept. They feel that in equity, the independent development of the cable industry should be allowed to continue because the re-assignment of the CATV operators' co-axial communications to the telephone companies at this late date would be tantamount to expropriation.

On the other hand the telephone carriers refer to the fact that, according to the CCTA's own statistics, more than 70 percent of CATV cable footage in Canada is owned by the telecommunications carriers and the balance by CATV operators. The latter, however, state that according to subsequent CCTA studies the correct figure is 62 percent. Furthermore they point out that this percentage applies only to trunk and distribution cables and excludes subscriber drop cables and all electronic equipment. The CCTA feels that it is



more realistic to make a comparison based on the total investment in cable television plant. They go on to state that roughly only one-quarter of the dollar value of cable television plant in Canada is leased to cable operators by the telephone companies on a long-term basis, such plant having been paid for by the cable operators.

2.5.2 CATV Use of Common Carrier Structures and Rights-of-way

The CCTA feel that in order to exercise full control over the CATV system it is essential that the licensee be granted pole contact rights to enable him to erect and own the cable facilities.

According to the CCTA, pole contacts rights are granted by some Hydro companies and Public Utilities Commissions throughout Canada and by the B.C. Telephone Company. However, the telephone companies outside British Columbia generally refuse CATV operators the joint use of their poles; this means that in most cases CATV operators must depend upon contracts with telephone companies, and they say that these contracts limit the service that the operator may provide while permitting the telephone company to retain ownership and control of what amounts to the major part of the CATV system. In the opinion of CCTA, this in effect denies to the CATV operator the right to assume the full responsibilities laid upon him by the licensing authority and places in the hands of a third party who is not regulated by that authority an opportunity to eliminate potential competition through monopolistic control over the use of poles. Thus, they

feel that the public, by whose grace and in whose interests the rights for pole routes were originally granted, is ignored in favour of the interests of the telephone companies. In addition, the CCTA states that charges for cable and its placement are significantly higher when the common carriers are involved, in general as much as 50% above the CATV operator's cost of completing the same construction to the common carrier's specifications. As a result, they say that rates paid by subscribers to the CATV service are higher than they should be.

The telephone carriers while acknowledging that they have been granted rights-of-way by public bodies, say that such rights are for the purpose of carrying out their responsibilities under their respective charters to provide a public telephone or telecommunications networks. The CATV companies however, in demanding the right to own their own cables, see no reason why they should not have the right to operate as limited common carriers in competition with the telephone companies and even have an exclusive right to provide certain new types of services. They would divide future common carrier networks into two: a voice band and medium bandwidth telephone network; and a broadband coaxial CATV network. They would thus become a part of the common carrier industry, and seek governmental support for this.

The TCTS members consider that the sharing of their structures and facilities with other companies for the erection of the latter's own separate cable network is highly undesirable

from the points of view of safety of personnel, protection of equipment, continuity of services and economics. They say that if the principle were to be established that the carrier's right-of-way is a highway for carrying the separate cable facilities of any one party not willing to avail himself of the services of the common carrier, then presumably the same right would have to be extended to all comers, e.g. the computer industry, educational authorities, burglar alarm companies, and wired music companies. The telephone carriers note that they have served these, and many other specialized industries heavily dependent on communications, for many years and that it is difficult to see why the CATV industry should be treated differently.

The TCTS also draw attention to the fact that CATV companies often are provincially incorporated with objects that include activities, such as data transmission and private wire service, which are possibly beyond those that may be federally regulated under the Broadcasting Act. Therefore, according to TCTS, where there is no provincial legislation for the purpose of regulating such activities a CATV company which owns its own cable is potentially unregulated in respect of such activities. However, in the case of B.C. Public Utilities Commission v. Victoria Cablevision et al, it was decided that a CATV undertaking is exclusively within federal legislative authority. Based on the principle of indivisibility of the undertaking it might be argued that the non-broadcasting cable activities of such an undertaking would be outside provincial jurisdiction. It is also

argued by TCTS that while under the recent amendment to the Railway Act the effects of federal regulation indirectly extends to CATV companies served by federally chartered carriers, through contractual relationships, whereas if pole attachment rights were granted to CATV operators that federal regulatory jurisdiction would be removed.

## 2.6 CATV NETWORKING FACILITIES

The network facilities referred to are those which may be used to interconnect CATV systems or the head-ends of systems. The CCTA see such a need as being possible for either short term use or for long term permanent connection. In either case they consider the public interest requires that the solution be related to the cost of the service and to conservation of the radio frequency spectrum.

They recommend that for short term use common carrier links should be used if it can be shown that the charges are not significantly higher than would be the case for CATV operator-owned facilities. For long term use, they say the system operator should be permitted to provide the link if spectrum space is available and a significant cost saving will result.

The CCTA recommends further that a consulting company be appointed by the licensing authority to act as a clearing house for applications involving possible use of common carrier facilities. They feel that such a consultant would be of benefit to both applicant and licensing authority in that a focal point for information and expertise would be available to assist applicants lacking the necessary engineering assistance while the licensing authority would be assured of receiving realistic proposals for the best possible routes using the most practicable facilities.



3. THE EXTENT TO WHICH CATV OPERATORS  
SHOULD ENGAGE IN NON-BROADCASTING  
ACTIVITIES, INCLUDING THE RENTAL OR  
SALE OF CABLE CAPACITY AND ASSOC-  
IATED FACILITIES

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3.1 PRODUCTION AND RENDERING OF SPECIAL SERVICES

The TCTS consider that CATV systems are essentially established for providing a one-way service to the general public, and as such are licensed as broadcasting undertakings by the CRTC. They note that such licences do not provide for special services such as information retrieval from data banks, industrial television, etc. They further say that the future development of cable systems generally will require an integrated plant capable of transmission and switching of many non-broadcasting services to business and residential subscribers. In the wired city concept, the wide band facilities might include improved telephone services, videophone, information retrieval, data services, facsimile, etc., in addition to CATV and educational TV. Since some of these non-broadcast, new-type offerings will be two-way services requiring switching, the common carriers feel that they can be most economically integrated with their primary offerings in a consolidated system.

The TCTS would consider any extension of the activities of the CATV operator into the common carrier field detrimental to the sound development of the telecommunications carrier industry and therefore highly undesirable. However, when this has occurred and a CATV operator has spare wideband capacity in his system, the telecommunication carriers think he should be prepared and permitted to lease it to the telecommunications carrier for other telecommunications services.

Generally speaking and as noted earlier the CCTA makes a distinction between one-way services based upon broadband co-axial facilities, as provided by CATV operators, and narrowband subscriber-to-subscriber services offered by the common carriers. They consider that the common carriers will not be in a position to provide extensive broadband transmission facilities for the new, non-broadcasting services in the near future, for economic reasons. They accept that the common carriers should provide the fully bi-directional circuits, and agree that the broadband systems providing CATV service cannot be considered a fully bi-directional subscriber-to-subscriber service.

The CCTA foresees the development of many services to business and residential subscribers. Because certain services can be provided only by broadband facilities, others by the telephone network and yet others by either facility, they propose a division as follows:

- 1) Services exclusive to the broadband network (i.e. capable of high quality video and some addressing)

Television (broadcasting & ETV)

FM broadcasts

Shopping in the home

Surveillance (traffic & crime)

Selected audience programs  
(i.e. to doctors, dentists, teachers, etc.)

Stored T.V.

- 2) Services exclusive to the telephone network (i.e. capable of total addressing but no TV video)

Telephone Service

Picture Phone Service

Voting in the home

Meter reading

Alarms (burglar & fire)

Banking in the home

- 3) Services suitable for both broadband network with limited return pulse facility, and the telephone network

Facsimile

Library books

Computer communications

The CCTA considers that in respect of the services specified in 3) above, in which either system could provide the facility, using different techniques of transmission, both should be allowed to develop and be offered to the public. It is argued that this type of competition is essential to normal business development and the advancement of techniques. Some services may require the inter-connection of the two networks and the right to do so should be protected.

The common carriers point out that the technology employed in the common carrier industry is under constant evolution, and it is therefore important to avoid arbitrary decisions regarding the division of wide-band and narrow band telecommunications distribution between different organizations. The one-way CATV systems we have today are a long way from being a satisfactory wide-band communications medium except for TV program distribution. They caution that the ultimate wired city must be approached on a gradual basis.

Urban distribution systems of the common carrier companies will change much over the years to come. Distributed switching systems will result in shorter subscriber loops as some of the steps in the switching process, now handled by large central offices, will be moved closer to the subscribers. The carriers claim that CATV programs could be carried over trunks to each of these smaller switching offices with a relatively short distribution route to the CATV subscribers. There is a distinct possibility of miniature coaxial cable or other wide-band subscriber loops that could provide all telecommunications services to the subscriber over one cable.

Further, the carriers say that much work is being done to reduce the bandwidth requirement for TV, as much of the information in the present form of a TV signal is redundant. A major change in the bandwidth needed by such signals would have a comparative impact on TV, both over the air and over cable. There is no guarantee that the use of coaxial cable systems will continue to be the main method of distribution. The warning of the common carriers is therefore: "Don't let us jeopardize the future by splitting the urban distribution system between two groups of common carriers!"

### 3.2 RENTAL OR SALE OF CABLE CAPACITY AND ASSOCIATED SERVICES.

In the matter of rental or sale of cable capacity, the common carriers take the position that if a CATV operator has spare wide-band capacity, he should be prepared and be permitted to lease it to the telecommunications carriers for use in the

general communication network. They oppose the leasing by CATV operators of cable capacity to others, i.e., they generally oppose any type of common carrier activity on the part of CATV operators.

For their part, the CCTA state that the type of cable used in CATV undertakings is one which is capable of carrying many frequencies simultaneously, on each of which may be impressed different information. With suitable receiving equipment, such as a television or FM receiver, any one of the signals carried by the cable can be received without interference from the other signals also present on the cable. The total frequency capacity on the cable, usually erected completely at the expense of the CATV operator, may not be fully employed for his broadcasting receiving undertaking. It is the view of the CATV industry that the public interest will be served best if the industry is allowed to use imagination and ingenuity in the use of unused frequency spectrum on the cable.

They firmly believe that prospective communications customers should be free to choose the use of whichever facility and service meets their needs at mutually agreeable rates and conditions. Since the CATV industry is made up of many small companies, the policy of any one may be modified easily to accommodate a community need which may be uncovered by the company management or by the community itself.



4. THE EXTENT TO WHICH COMMON CARRIERS SHOULD  
BE GRANTED LICENCES FOR BROADCASTING UNDER-  
TAKINGS

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While the common carriers do not seek to engage in broadcasting on a large scale, they do consider that if it is in the public interest in special situations, they should be permitted to hold licences to carry on broadcasting transmitting undertakings. Also, they believe that under certain difficult economic and geographic conditions, there could be cases where it would be logical for them to hold licences for broadcasting receiving undertakings. The conditions under which the individual telecommunication carriers consider that they should be granted broadcasting receiving licences will be covered in briefs submitted to the Canadian Radio-Television Commission.

The broadcasters on the other hand oppose any move that would encourage the common carriers to become directly engaged in broadcasting. In their view it is conceivable that, given the opportunity of entering the broadcasting field, the carriers with their large financial resources, could soon monopolize the private sector of broadcasting. Because the carriers would also be handling all other telecommunications, the broadcasters feel that such monopoly trends would result in a reduction of variety in broadcasting services and a lack of essential accountability to the audience.

Because the jurisdiction over telecommunications in Canada is divided between the federal and provincial governments, the broadcasters believe that the introduction of provincially

or municipally-owned carriers in broadcasting would inevitably place added strains on the relationship between the various levels of government and lead to serious and divisive problems between them arising out of over-lapping and conflicting objectives in a highly sensitive area.

The CBC takes the view that it is not in the public interest to have either carrier organizations or a national organization such as a postal, telephone, and telegraph agency (as is done in some foreign countries) own the transmitters of broadcasting undertakings and operate them even though they are programmed from another source such as CBC or private programmers. Where this has been the arrangement in foreign countries, it has proved to be very onerous, complicated, and entirely unsatisfactory, i.e. particularly to the broadcasters where there is any indication of an identity problem. To expand - in Canada, a system such as this could be much more inefficient and certainly incompatible with the competitive element which exists between the public and private sectors of the Canadian broadcasting system, and between Canadian stations and their United States' counterparts. Here, the identity of the "owned and operated station" is fundamental to the broadcasting concept both in real terms and in those which respect tradition. The CBC consider that the imposition of another "agency", whether it be a common carrier company or a Crown agency, would seem to be an intolerable burden on the present highly-regulated broadcasting services of a country which needs these in a desperate manner.

The CCTA too is opposed to the granting of broadcasting licences to the common carriers. They have noted that the common

carriers will play an increasingly important role as the field of communication develops over the next decade. The common carrier service will be used to an increasing extent by many industries including broadcasting receiving undertakings. Thus they feel that a serious conflict of interests may result if common carriers are granted broadcasting receiving licences. In their opinion this can only be avoided by the common carriers being charged with the responsibility of providing facilities and having no control over the intelligence relayed via those facilities.

The CCTA is opposed also to the licensing of common carriers to carry on a network operation. Since common carriers already provide the transmission facilities, such a licence would permit them to produce and originate as well as distribute programs for use by broadcasters. In the opinion of the CCTA such an undertaking would be completely foreign to the expertise and skills of the common carrier.

The common carriers observe that there would appear to be a certain contradiction in the CCTA's representation that anyone owning a CATV company is a "creative broadcaster" while on the other hand one is given to understand by the cable operators themselves that CATV operations are primarily hardware-oriented. The carriers generally refute the theme that they are unimaginative and predominantly hardware-oriented, and note that the tremendous creativity

of this industry and the very nature of its business activities do not lend support to this view. They state that while they have no intention of engaging in broadcasting as such, except as suggested in the first paragraph of this section, there would appear to be no reason why common carrier companies should be excluded in principle from being broadcasters. On the other hand if a firm government policy should call for the separation of the medium and the message, and if this principle would apply clearly and equally to those engaged in broadcasting and to common carriers, they would not object to such a separation of functions.

5. SPECIAL PROBLEMS RAISED WHEN A COMMON CARRIER  
IS SUBJECT TO PROVINCIAL OR MUNICIPAL  
TELECOMMUNICATION LEGISLATION

5.1 PROVINCIAL REGULATION OF RATES

Generally speaking provincial legislation does not provide for direct regulation of rates applicable to the type of private line services supplied to broadcasters by provincial telecommunications carriers. In Quebec however, the Public Service Board is deemed to have full regulatory jurisdiction over private line services. Telecommission Study 8(a) provides details concerning the manner in which provincial regulation of private line service has been applied. The lack of regulation leaves broadcasters and carriers to settle the terms by negotiation, a situation not always satisfactory in the absence of competition among carriers and the policy of tending to limit the broadcaster's right to own their own interconnecting facilities.

5.2 PROVINCIAL REGULATION OF SPECIAL CABLE TV SERVICES

There does not generally appear to be provincial regulation of special cable TV services except in regard to the use of rights of way and compliance with electrical protection codes. In certain provinces there is provision for municipal regulation as to the construction and maintenance of cables, including those carrying radio and television programs. In British Columbia there is specific provision to regulate the use of highway rights of way by radio or television broadcasting companies or closed circuit television companies. In Quebec, the Cities and Towns Act, as



amended (1968, c.55), provides generally that a Council "shall have all the necessary powers to establish and administer systems of community radio and television aeralis for the needs of the public . . . ." Some of this legislation may be ultra vires of the provincial jurisdiction.

5.3      LIMITING EFFECTS OF PROVINCIAL LEGISLATION ON BROADCASTING  
            ACTIVITIES OF PROVINCIAL COMMON CARRIERS

            There is no provincial legislation that would impose limitations on the activities of provincial telecommunications carriers, whether or not they are government owned, in regard to their relationship with broadcasting undertakings.

6. SPECIAL RELATIONSHIP PROBLEMS ARISING FROM THE  
PROVISION OF SERVICES FOR EDUCATION BY COMMON  
CARRIERS OR BY THOSE ENGAGED IN BROADCASTING

Telecommunications carrier companies say that they are rapidly expanding their facilities for the distribution of educational programs and are often able to combine facilities for ETV transmission with other transmission services. They are not normally involved in the production of ETV programs. If ETV is to be considered as a broadcasting undertaking, then the programs should be produced by broadcasters or educational authorities and distributed through the broadcast segment of the cable services provided by the telecommunications carrier. Alternatively, distribution could be arranged through the private point-to-point networks of the telecommunications carrier where the information is restricted to educational institutions.

One costing difficulty which telecommunications carriers face in the leasing of facilities to educational institutions is that these educational institutions may purchase their own equipment free of certain taxes and duties which the telecommunications carriers may have to pay.

Broadcasters point out that they have for many years co-operated with Provincial and Municipal educational authorities in the transmission of educational material to schools and for adult educational purposes.<sup>1)</sup> Presumably, educational transmissions could

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1) See briefs of Canadian Association of Broadcasters:  
a) 1968, brief on educational broadcasting submitted to the Parliamentary Committee on Films and Assistance to the Arts.  
b) 1970, brief submitted to the Special Senate Committee on the Mass Media, which included material on educational broadcasting.

be carried from a common point by common carriers or by those operating CATV systems. It is understood that several systems in the latter category are now being used or are under development.

The present arrangements for educational broadcasting are such as to have the CBC, through a relationship with the educational broadcasting authority in a given Province and the Secretary of State's department, apply for and hold the licence for a given educational broadcasting station, while accepting programming from the educational broadcasting of the Province or City concerned. Here, there is a close relationship between the CBC and the educational broadcasting authority as to policies and type of programming.

The CBC's position on educational broadcasting has been that, if Government policy is such as to preclude the holding of licences by a provincial educational broadcasting authority or a department of education, then this present arrangement is probably as reasonable a compromise as could be expected.

It is of course understood that such educational broadcasting channels would also be provided -- as arranged under CRTC regulations -- on any cable system which covers the given area concerned by the educational broadcasting authority (provincial or metropolitan). It is the CBC's contention that terrestrial transmitters should still be used for some time to come as it is not anticipated that cable systems will reach into every area of a given province or metropolitan division for some years to come.

Then too, there is the highly desirable arrangement for large metropolitan boards of education -- or educational authorities -- whereby program retrieval systems can be developed in co-operation with cable companies or whomever. Again, this is another very desirable supplement to the over-all educational program being developed through broadcasting. Indeed, it may be in the future the fundamental element of this program.

The CCTA urges that, in order for the communications industry to best fulfill the developing needs of education, it should be left unfettered by regulation in this regard so that the education authorities are free to select those in the industry whom they judge to be best able to meet all or part of their requirements.

7. REGULATION OF RATES CHARGED AND STANDARD  
OF SERVICE PROVIDED BY COMMON CARRIERS  
TO THOSE ENGAGED IN BROADCASTING

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7.1 RATES AND SERVICES GENERALLY

The principal problem of a special nature foreseen by the common carriers is that related to providing service in remote or difficult locations. Where the provision of such service is considered desirable for reasons of area development, national interest, etc., some form of recognition of additional costs to the carriers to enable them to accomplish this has to be made. Any examination or determination of competitive rates must take into consideration the standards of service that are to be expected. Only when the standards of alternative systems are identical can the rates be compared directly.

The Canadian Broadcasting Corporation consider that rates should be on a sliding scale depending on the quality of service to be provided, the difficulties of the particular terrain involved, and the number of microwave hops required. In large systems a flat rate per mile can be used for extensions but on smaller systems the characteristics of the path involved affect the cost for a given quality. One major factor is the signal-to-noise ratio that can be expected for a given percentage of time. Negotiation in each case seems the most fair way; a key note is flexibility.

According to Telesat Canada any proposal for regulations respecting the rates charged and the standard of service provided by that Corporation to those engaged in broadcasting must recognize



that Telesat must operate on a commercial basis by virtue of its incorporating Act; thus it is essential that any rates or standards imposed allow for a reasonable return on investment to the corporation and its shareholders.

The CCTA notes that the rates currently proposed by common carriers for the use of their microwave facilities are based upon the provision of broadcast quality service which, in addition to high picture quality also requires that the circuit be one of high reliability.

They believe that there are many uses for a common carrier facility which do not require the high reliability justified for use on broadcast circuits. As an example the CCTA refers to a case where a common carrier is used to bring in one channel of television to be added to a system already carrying 8 or 10 channels by direct off-air pick-up. In such a case a lower reliability often could be accepted. They recommend therefore that, because different circuit uses demand different standards of reliability, circuits providing different reliability be offered by common carriers at rates reflecting the need for less equipment in circuits demanding lower reliability. This will enable circuits to be chosen by the licensee (broadcasting receiving undertaking) which will provide adequate service without burdening the public with high electronic transportation costs.

## 7.2 RATE PROBLEMS

The private broadcasters note that extensive use is made by industry in general of private line services provided by

the common carriers. They consider that the broadcasters making use of private line services should be treated in an equitable manner in relation to other users. Their experience has been that common carriers make it a practice of quoting a price for such services that is considerably higher than the amount which is finally agreed to after extensive negotiation. They strongly oppose this approach because they view the common carriers essentially as monopolies, especially in the provision of local wire line facilities for AM stations including studio-transmitter links, remote pick-up, etc. In addition, there is evidence that even where competitive common carrier facilities exist, arrangements between the carriers result in refusal of one of the competing companies to provide broadcasting local services. They believe that where these monopolistic practices exist on private line facilities, they are inconsistent with a normal common carrier-industry relationship.

The foregoing applies especially to AM and FM operations in which wire line facilities are normally provided. For TV operations, studio/transmitter links are more demanding technically and must be provided by microwave facilities where the distance involved is appreciable. This is one area where, as long as the broadcaster had a choice either to establish his own facilities or to hire facilities from competing common carriers, conditions were satisfactory. However, a new problem has now emerged as a result of the Department of Communications' policy in which broadcasters are encouraged to obtain TV microwave service from the

common carriers when meeting the requirements of the CRTC to expand broadcasting coverage by means of rebroadcasting stations. In such situations it has been found that rates quoted by the carriers greatly exceed the alternative cost of providing broadcaster-owned facilities of a design which their consulting engineers and suppliers have assured them would be adequate. The broadcasters feel that this new policy gives the common carriers a virtual monopoly in the provision of microwave facilities, and while intervention by the Department of Communications in specific instances has resulted in some reduction of the common carriers' charges, broadcasters remain dissatisfied because in their view this is usually a higher cost solution.

The telephone carriers, in considering complaints concerning rates charged to broadcasters note that such complaints divide into two categories:

- 1) claims from other users of their system that rates to the broadcasters are too low and that these services are being unfairly subsidized from the other revenue.
- 2) claims from the broadcasters that their rates are too high and indeed are exorbitant. The carriers say that broadcasters very often claim that they can provide many of their own facilities at a lower cost; and further that the telecommunication carriers often quote an extremely high initial price only to scale it down when they meet resistance.

The telephone carriers consider both of the broadcasters' claims to be quite inaccurate. In the first place, a broadcaster will often base his calculations on a cheaper type of microwave system, one that uses greater hop lengths, insufficient tower heights and with inadequate primary power protection. In most instances he would not be willing to accept this type of system from the common carriers.

The carriers quoted a recent instance in which the broadcaster rejected the price offered by the common carrier and proposed his own cheaper system. The common carrier company recalculated its price on the basis of the system proposed by the broadcaster and was indeed capable of offering a much lower price but now the broadcaster rejected this system as being inadequate. Ownership seemed to be a matter of principle for this broadcaster.

The carriers note that some broadcasters who have built their own microwave systems now want to sell these to the common carriers and lease back the circuits needed.

However, the private broadcasters are not satisfied with the foregoing rationale of the carriers. They argue that the parameters of the economical type of microwave system are determined not by a broadcaster but by a fully qualified professional engineer; and they contend that the illustration by the carriers' of an instance of their recalculating the price for a microwave system does not portray the complete picture of what was involved or the outcome of the problem.

The telephone carriers state that they do not apply rate averaging<sup>2)</sup> for special microwave channels for television transmission. Such transmission systems are offered on a competitive basis.

To the extent that facilities are available, TV channels are leased for occasional use in accordance with the rates established by each company for these services.

Similarly, audio program channels for regional radio broadcasting networks are provided in accordance with rates for these services established by each common carrier company for use within its territory.

Service to the CBC and CTV networks is provided under special contracts which in some cases stipulate uniform rates for extensions but this type of averaging is peculiar to the particular contract.

### 7.3 STANDARD OF SERVICE PROBLEMS

The broadcasters are concerned about a number of problems relating to the standard of service provided by the common carriers.

The most frequently reported technical problem is the failure or inability of the common carrier in many cases to provide wire-line circuits with frequency bandwidths adequate for audio transmission for AM and FM broadcasting services. Such a broadcasting

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2) For information on rate averaging see Appendix "A" The Pricing of Telecommunications Services, Telecommission Study 7.(a)(b).



station must have a line with a minimum bandwidth of 5,000 Hz although it is contended by many broadcasters that this is inadequate and that 8,000 Hz is minimal with 10,000 or 15,000 Hz often being necessary, especially for FM broadcasting. Frequently the best that can be provided is a telephone voice circuit of 2,700 Hz bandwidth.

While most of the technical deficiencies involve wire-line facilities, problems also are encountered with the service which uses microwave facilities to feed rebroadcasting sites. One station experienced failure of common carrier facilities on five occasions during a five month period, one for five hours and one for four and a half hours. The faults were repaired in both those cases by the broadcaster's own technical staff. The common carrier's service personnel took over 8 hours to arrive at the site in each instance.

The broadcasters point out that statistics relating to technical difficulties and outages often do not indicate the full import of the disruption of broadcasting service. Where a large station originates programs on behalf of a TV network, sometimes the loss of the program feed represents a loss of feed to the entire trans-continental network. Such problems are also important to the advertising agencies for whom it is little consolation to be told that responsibility for loss of signal is that of the common carrier.

The common carrier will assume liability only for waiving his charges for that portion of time that microwave transmission

is lost. Time and production dollar loss as well as air time loss has to be borne by the broadcaster and are not recoverable from the common carrier.

The telephone carriers hold the view that it is generally impossible to assign a dollar value to message interruption or distortions and that no telecommunication system is 100% reliable. The best way to minimize interruptions is the use of fully duplicate circuits with automatic switching to the spare circuits in case of failure of the working channel, and this system is used by some broadcasters. Another possibility would be to purchase insurance related to the value of the particular program.

However the CAB mentions that there have been circumstances where a broadcaster had contracted with a common carrier for fully duplicated circuits, only to find when the main program line failed, that his spare circuit had been put to some other use by the carrier because he was not using it. An example of this and other complaints of broadcasters concerning their problems are included in Appendix B to the Canadian Association of Broadcasters' submission to Study 1(d).

#### 7.4

#### RATE REGULATION

It is the opinion of the private broadcasters that the resolution of most rate problems is best left to a process of arbitration before an appropriate agency, but they consider it is

essential that uniformity of legislation exist across Canada if such a process is to be successful. That this is not the case has been pointed out in Section A. The broadcasters feel therefore that they operate in a situation where regulation and supervision stops short of ensuring that they can discharge their responsibilities effectively when they are dependent on the service and facilities supplied by common carriers.

They point out that in dealing with a broadcasting application the CRTC looks at financial responsibility, ownership, proposed programming, staff, etc and the Department of Communications considers technical aspects. However, there is no requirement for the common carrier to establish that it has given a firm commitment to the applicant for services and equipment at rates which are fair and reasonable. In other words regulatory jurisdiction relative to the carrying out of the broadcaster's total responsibilities, to the extent that a federal carrier is involved, is distributed among three Acts, the Broadcasting Act, the Railway Act and the Radio Act. The broadcasters note that at the present time the carriers are in a dominant position in their relationship to the broadcasters, and it is not clear from the Railway Act what relief a broadcaster may secure in case of disagreement with the carriers. The broadcasters consider that there appears to be a need for statutory recognition of the vital relationship between carriers and broadcasting so as to ensure the effective co-ordination of all of the elements in carrying on a broadcasting undertaking.

The broadcasters feel that the situation for the broadcasting undertaking using or proposing to use the facilities of provincial carriers is even more complex. In this case jurisdiction may be divided between numerous acts and administrative and regulatory tribunals in each of the ten provinces with no expression of any co-ordinated policy or practice.

The broadcasters are heartened by the recent amendment to the Railway Act under which the Canadian Transport Commission will be able to regulate rates charged for private line services where the common carrier involved is subject to the jurisdiction of the Commission. However, the broadcasters believe that rate control is not enough, and that adequate technical standards must be imposed to overcome the difficulties discussed, together with obligations for responsibility for losses suffered by broadcasters.

Beyond this the broadcasters feel that ideally there should be a competent, fair and impartial single referee to whom the broadcasters can bring problems relating to the rates, standards and facilities of common carriers and where just and reasonable solutions may be reached.

The views of the Telecommunications carriers on the subject of rate regulation have also been expressed in submission to other Telecommisison studies, notably in Studies 7 (a,b) and 8(a).

8. INTERCONNECTION OF CUSTOMER-OWNED  
APPARATUS, LINES OR SYSTEMS TO THE  
FACILITIES OF THE CARRIER

The telephone common carriers maintain that the connection of broadcaster-owned apparatus and devices to private wire facilities is generally permitted, however, the interconnection of private communication systems to the general switched network facility is not generally permitted for technical and economic reasons.

The broadcasting industry state that they have applications for services not included in the standard offerings of the carriers and which involve interconnection. They also say that they bear a public service responsibility which is not common to the average business customer of the carrier. For their part member companies of Trans-Canada Telephone System say that they will continue to negotiate special interconnection agreements with the broadcaster to accommodate his service needs.

The Canadian Association of Broadcasters states from its membership that there are no serious problems in the interconnection of the common carrier facilities to broadcasting stations in Canada. Arrangements have been completed in co-operation with the public carriers in every case without difficulty.

The Canadian Cable Television Association, while not quoting specific cases of difficulty, submits that the interconnection of customer-owned apparatus lines or systems to the facilities of the common carrier is so desirable and so much in the public interest that there ought to be regulations introduced preventing the denial of interconnection without just cause. The CCTA feels that inter-



connection of facilities results in optimum flexibility and encourages healthy competition. Denying interconnection establishes quasimonopolies, causes duplication of facilities and tends to inhibit innovation and technological progress. In the view of the Association the interconnection of facilities owned by different groups, companies or people can be effected efficiently, provided that reasonable basic engineering standards are required and met, and willing co-operation is demonstrated by both parties.

For instance, the CCTA argues that a subscriber should be able to dial up access to an Information Storage Computer using a telephone facility and line; the computer may be operated by an independent company, and the information from it could be made available either at video or by digital coding over either the broad band cable system or telephone system. When dialing for the information, the subscriber would "instruct" the computer which system to use for the return route. They say that there are many such special services which, in the public's interest, could be best provided by the interconnection of facilities and that the economy and flexibility which can be enjoyed through interconnection of systems should not be denied.

In advocating a policy permitting systems interconnection, the CCTA urge that the policy should specifically include "mechanical interconnection", i.e., attachments which would enable the CATV licensee to make use of all poles (including telephone poles). This would enable the CATV operator to maintain control over the cost of

construction and ownership of the system. They argue that it would also relieve the licensee of any obligation to enter into costly telephone company contracts for cable service which, often arbitrarily limit the type of service the broadcasting receiving undertaking may offer.

The CCTA cites section 6.(4) of the Bell Telephone Act, c.48, 1967-68, with the underlining as follows:

- (4) For the protection of the subscribers of the Company and the public, any equipment, apparatus, line circuit or device not provided by the company shall only be attached to, connected or inter-connected with, or used in connection with the facilities of the Company in conformity with such reasonable requirements as may be prescribed by the Company.

The CCTA notes that a number of telephone companies in Canada have refused to allow the attachment of foreign-owned lines to their poles and in their ducts. Some have refused to discuss the possibility of such attachments and none have tabled "reasonable requirements". They contend that this uncooperative attitude thwarts the attempts by the CATV licensee to act in the public interest.

However in regard to those comments it should also be noted that section 6 of the Bell Telephone Act further provides for the Canadian Transport Commission to review requirements prescribed by Bell Canada under subsection (4), and that any person may appeal to the CTC to determine the reasonableness of such requirements.

9. SIGNIFICANCE OF THE SPECIAL REQUIREMENTS  
OF BROADCASTING IN DETERMINING WHETHER  
COMMON CARRIER SYSTEMS SHOULD BE COMPETITIVE

The telephone common carriers submit that, from a technical point of view, there is no reason why all telecommunication services cannot be carried over a single system. However, Government policy in the past has favoured the establishment of competing trans-continental telecommunication systems as exemplified by the systems of TCTS, CN/CP and Telesat Canada. The carriers argue that the development of new, more sophisticated terrestrial transmission systems employing PCM radio, high capacity coaxial cable, circular waveguide and at a somewhat later time laser transmission can radically reduce the cost of long-haul transmission. However, these developments can only be justified if a sufficient volume of traffic exists to make economic use of such systems. Any proliferation of private or public telecommunications competing systems would undoubtedly delay their introduction.

Telesat Canada takes the viewpoint that government policy respecting the provision of service by the common carriers to the broadcasters should be based on the same general principles to be considered in the provision of services to the other users and eventually the public. Telesat submits that it is in the best interests of the public that unnecessary duplication between the satellite and the other telecommunications services be limited and that the communications resources be allocated in the most efficient and economical manner possible on a long term basis by means of an appropriate regulatory body. They say that it is only by utilizing

this approach that costly duplication and overlapping of communication networks will be avoided.

The position of the private broadcasters is to support competition as a natural means of development of efficient and economical systems. There are, however, limits to which competition can be encouraged without a detrimental effect on competing parties. It is their view that the current policy of TCTS-CN/CP competition should be encouraged and expanded where possible and that with the advent of Telesat with its availability of circuitry to broadcasters, Competition would appear to have reached a point where the existence of additional systems might not be warranted. The broadcasters observe that in the United States the use of limited common carriers for the provision of broadcast transmission service, largely for CATV systems, has been encouraged. It may well be that common carriers of this type might under certain circumstances in the future add to the efficient operation of the Canadian system. These statements do not however detract from the overall philosophy of the broadcaster that the use of microwave facilities should be licensed directly to the broadcaster in many cases, and that they should have the right to provide their own facilities where it is more economical and efficient to do so.

The Canadian Cable Television Association maintains that the unnecessary duplication of facilities and use of several frequencies for parallel services is wasteful if the assigned frequencies are only partially occupied. It should not in their view, however, be necessary to restrict competition in order to guard against such waste.

Once a common carrier company has physically established a facility and is using an assigned frequency, that company has a quasi-monopoly by virtue of the marginal cost involved in adding equipment which may be required to use the assigned frequency for the carriage of additional services. The CCTA feels that a common carrier once established should be able to successfully meet competition. They argue that competition leads to imaginative development in the technological and business sense; it sharpens the awareness of the need for maximum economy, while ensuring that standards of performance are met, all of which is entirely in the interest of the public. It is the CCTA's recommendation that competition amongst common carriers for the provision of service be encouraged.





# TELECOMMISSION

**Study 1(e)**

**The Relevance of United States Legislative-Regulatory Experience to the Canadian Telecommunications Situation**

*The Department of Communications*



(e) THE RELEVANCE OF UNITED STATES LEGISLATIVE-REGULATORY  
EXPERIENCE TO THE CANADIAN TELECOMMUNICATIONS SITUATION

A study for the Telecommission,  
Department of Communications

by

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June, 1970

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## Preface

This is a study of the United States experience with telephone and telegraph organization and policy -- that is, how the country has regulated the provision of telephone and telegraph services. Its validity depends on the reliability of the selection of facts, the quality of its logic, the cogency of its assumptions and the relevance of the questions or issues identified as central to the inquiry. In those respects it will speak for itself and personal comment is irrelevant.

In formulating proposals for Canadian consideration based on United States experience, the author did not attempt to ground the proposals on detailed analyses of Canadian telecommunications institutions or policies. Indeed such analysis was precluded by the terms of reference for the study. Apart from some a priori considerations relating to the TransCanada Telephone System and Canadian National/Canadian Pacific duopoly, others relating to the Bell Canada vertical relation to Northern Electric, and a reference to the relation of Telesat Canada to the proposed Canadian Telecommunications transmission entity, no explicit or detailed attention was given to present Canadian regulatory or operational arrangements. It is not obvious that Canadian Overseas Telecommunications Corporation or the Canadian Radio-Television Commission's operations would be substantially affected by adoption of the present proposals. Public and private broadcasting networks and stations are another matter: Their operations could be substantially affected by the existence of the proposed

market segment. The same would be true of other possible users of the market segment.

Prepared in less than two months to meet a short-term deadline, the report might be judged charitably where details of citation or syntax are concerned. Time did not permit circulation of a draft for critical comment to professional colleagues although a number contributed valuable suggestions.

Dallas W. Smythe

## INTRODUCTION

### Technology, Organization and Public Policy in Domestic Telecommunications

The essential context for consideration of rate and service regulation of telecommunications in the United States is an awareness of the development of the technology, organization, and public policy which have governed those rates and services. The services available have been functions of the state of the technological art. The organizations which have rendered and those which have regulated the rates and services have had their own historical roots and dynamic interrelations. And at the root of all telecommunications policy (including rate and service regulation) is the obvious fact that telecommunications, like other forms of communications, are subject to the political process: In the nation state, communications policy lies intimately with sovereignty. The technological developments clustered around the transistor, the computer, and aerospace activities have forced the United States into deep questioning of the relations between national policy, organization and technology for telecommunications. If we would draw the proper inferences from the United States experience, therefore, it is necessary to begin the analysis by going back to its basis; treatment of the problem solely at the level of the mechanics of rate and service regulation would be meaningless, divorced from the larger meaning of the scene.



In the 19th Century the nation state depended on the monopolistic private corporation as its agent in domestic telecommunications, when markets and technology were unique to such corporations.

The doctrine of delegated powers is central to the constitutional law of the United States and of other nations which derived their legal systems from the English tradition. In no sector of its activities is this doctrine more sensitive than in the field of telecommunications: The state may do for itself, or delegate the doing to its surrogate or agent who thereby undertakes responsibility and accountability to the state. The United States constitution assigned the responsibility and power to operate a postal system to the Federal government and when that constitutional provision was approved, a postal system was the only available technological device for person-to-person record communication. (Incidentally, the postal system was the original store-and-forward system of data transmission.) The wire-telegraph technology was innovated by the United States Post Office, but was thereafter turned over for exploitation by private enterprise, using as the agent the then new organizational form of the private business corporation, buttressed by the patents on wire telegraphy (themselves provided under another provision of the Constitution). When wire-telephone was innovated, the policy of relying on the private corporation supported by patents on its technique was continued.

It is important to note that when innovated, there was a one-to-one correspondence between the telegraph corporation, its technology and its market for data transmission, and similarly for the telephone

corporation, its technology and its market for voice transmission. Their technologies were quite different. The telegraph technology was modelled on the transportation analogy of end-to-end portages, and boat trips on rivers, lakes or canals. The telephone technology rested on establishing circuits connecting two terminal instruments, regardless whether information was transmitted over those circuits or not. In the course of time, the industries manufacturing equipment for telegraph and telephone were similarly unique from each other and from other industries, and were typically tied to the telegraph and telephone operating companies vertically. This characteristic continued until around World War II.<sup>1/</sup>

In the almost 100 years when the technologies and markets for telegraph and telephone service were discrete and identified with their monopolistic organizations, there developed a body of customary practice for the "regulation" of those monopolies. It uncritically accepted

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<sup>1/</sup> "In 1934, the communications industry consisted of disconnected sectors, each endowed with considerable degrees of monopoly power." President's Task Force on Communications Policy, Final Report, December 7, 1968, chap. 6, p. 51. Hereinafter cited as "Task Force Final Report."

"Thirty years ago the supply of telephone equipment was in many respects unique. There were no other industries with similar manufacturing requirements. So, the interdependence of all the equipment argued strongly for a single manufacturer to assure that component parts would be compatible with the rest of the system." President's Task Force on Communications Policy, The Domestic Telecommunications Carrier Industry, Part I, June, 1969, p. 114. Hereinafter cited as "Task Force Domestic Carrier Report."

the monopolistic pricing structure with system-wide averaging of costs and prices.<sup>2/</sup> The promotion of the public interest was to be achieved through the successful operation of the Bell system, following its own policy: "One system, universal and interdependent."

The President's Communications Policy Board in 1951 identified the success of the monopolistic corporation (as agent) with fullfilment

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<sup>2/</sup> "The natural monopoly doctrine assumed that the firm would discriminate between markets in a fashion that shifted the average revenue function to a point where total revenue equalled total cost at the most efficient level of plant utilization. Assuming increasing returns, each customer group or classification would pay lower rates than it would in the absence of price discrimination....

"The practices of the state agencies, and later the FCC, led to a division of responsibility -- with regulation assuming a passive review function, while the carrier retained the initiative for decisions regarding pricing, output, and investment (governed only by the common law obligation to serve all comers at reasonable rates). Agencies reconciled themselves to a case-by-case review of problems in a quasi-judicial setting. The hope was that a careful examination of specific problems would establish judicial precedents and provide guidelines having future applicability. Through this division of responsibility, the carrier was able to assume both the initiative and responsibility for defining markets, establishing service standards, prescribing the rate of innovation, and determining the degree and mix of cross-subsidization."

Trebing, Harry M., "Common Carrier Regulation -- The Silent Crisis," Duke University School of Law, Law and Contemporary Problems, Vol. XXXIV, Spring, 1969, No. 2, pp. 316, 318.

of the purposes of the nation.<sup>3/</sup>

In 1951 the first computer was installed in the United States Census Bureau -- a fact symbolic of the then current revolution in telecommunications technology centering on computers, microwave transmission, and satellite systems, of which the 1951 President's Communications Policy Board took no notice.

The satellite-computer revolution in technology required government definition of monopolistic and competitive markets as essential instruments of national policy. The private monopolistic corporation now must be subordinate to such policy.

The satellite-computer revolution in technology made totally obsolete the previous notion that a one-to-one relation existed between the technology of telephone (or telegraph) and the monopoly-corporation agent of the state in terms of market structure, or patents,

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<sup>3/</sup> "For the overall national interest there must be sound, modern, efficient nation wide systems for the rapid handling of telecommunications....

"The telephone system of the United States is a financially sound, multi-billion dollar industry consisting of the Bell System and 5,000 independent companies....In view of the healthy condition of the telephone system, we conclude that no changes in Government procedure for insuring adequate service in the national interest are necessary. The telegraph system of the United States has experienced economic difficulties owed in part to the expansion of other means of rapid communication. The recent return of the principal telegraph company to profitable operation, in part because of improved management and modernization of its plant and in part because of greater general business activity, is encouraging." President's Communications Policy Board, Telecommunications: A Program for Progress, Washington, D.C., U.S.G.P.O., 1951, pp. 53, 111.



or performance in the public interest. Industrial capability in most branches of telecommunications technology now exists in a wide range of major corporations, most of them outside the common carrier category in most branches of telecommunications technology.<sup>4/</sup>

Powered by Federal R. and D. funds, the space program (every space probe is a communications satellite, at least for control purposes), and the computer have shattered the monopolistic corporation as the sufficient agent of national communications policy. The organization

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<sup>4/</sup> Thus a staff report of the President's Task Force on Communications Policy in 1969 said:

"Since World War II, other sectors, notably the electronics and aerospace industries, have assumed rather similar characteristics [to the telephone industry]. The telephone switching system, for example, is no longer a unique example of automated technology. The new ESS switching computers have more in common with second generation data processing equipment of the early 1960's than with newer computers with integrated circuitry. At the same time, the Defense Department's weapons systems development programs have provided experience in the use of a systems engineering group, such as the Aerospace Corp., to coordinate the work of independent suppliers to produce a complex, highly reliable and highly inter-related system....Thus far, however, the principal inroads made by electronic and aerospace firms have not been in markets dominated by carrier-affiliated manufacturers (although Western Electric does purchase some equipment, e.g., radio-telephones, from outside manufacturers as purchasing agent for Bell), but in international communications (e.g., satellite and ground station equipment) and in equipment bought directly by the user, and not by the carrier. There are at least eight manufacturers of acoustic coupling devices." Task Force Domestic Carrier Report," pp. 114-115.

The 1969 President's Task Force itself put it this way:

"Traditional telegraph service is in economic difficulty. And the telephone network is experiencing the flood tides of change involving private line and other specialized services, computer interconnections, complex relationships with various forms of television transmission and future accommodations to the use of satellites. Today, the industry is a dynamic combination of competitive and monopolistic markets, all related, and all going through processes of rapid transformation." Task Force Final Report, chap. 6, pp. 51-52.



to operate the first U.S. communications satellite (COMSAT) escaped the control of the private telephone and telegraph corporations, just as in Canada, TELESAT, Inc. escaped the analogous control. As Harry Trebing remarks, "Public policy could not re-establish the era of the monopoly firm even if it wished to do so."<sup>5/</sup>

The response of industry and government in the United States to this technological imperative has been striking. In the Above 890 case in 1959, the FCC permitted non-common carriers to operate microwave transmission services for their own use in the frequencies above 890 mc. The ATT reacted by conducting price warfare in its efforts to maximize its share of the booming market for teleprocessing data (with TELPAK, WATS, and WADS). Western Union, for which data transmission was a heartland market, responded in kind and appealed to the FCC for assistance in defending its market position. The resulting Domestic Telegraph Investigation by the FCC led to a requirement that ATT do the Seven-way Cost study which indicated high returns on the monopoly voice services and low returns on the competitive private line and record services. This in turn led the FCC to institute the first formal rate hearing on telephone rates in history. And in that rate hearing the FCC faced the new market structure, characterized by Treving as "an ill-defined admixture of monopoly and competition -- varying between different markets and submarkets."<sup>5a/</sup> In turn, the

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<sup>5/</sup> Trebing, op. cit., p. 327.

<sup>5a/</sup> Trebing, op. cit., p. 310.

telephone rate hearing, severe policy problems in the international common carrier industry involving COMSAT, the dilemma of what to do about potential domestic communications satellites, computer-related issues, and frequency management issues combined to provide a prickly agenda for the President's Task Force created in 1967.

What has happened in practice is that the traditional market-corporation boundaries have been eroded in various directions. As noted above, user-owned microwave systems have been permitted to operate for long-haul voice-record service, traditionally the preserve of the telephone and telegraph carriers. In the MCI case in 1969, the FCC permitted a specialized common carrier to employ microwave frequencies to provide service to the public, although the service depends upon interconnection with telephone system local loops at the terminals, or construction by the customer of his own links between terminals and MCI facilities. This opens the door to widespread competition between specialized common carriers and the telephone and telegraph companies. In the lucrative sub-market for transmission of TV and radio programs between stations, the previous telephone company monopoly has been symbolically broken by the action of the FCC in authorizing specialized common carriers in sparsely populated areas -- the largest of which is Western Microwave, Inc. -- although ATT refused to interconnect with them. Fundamental to the protection of monopoly common carrier markets in telephone has been the restriction against interconnection with the switched network.

One aspect of this restrictive policy was the restriction in telephone tariffs against "foreign attachments" at the terminals. In the Carterfone decision in 1968 the FCC ruled that such customer-provided attachments might be used. Carterfone links the switched network to non-Bell mobile radio systems. This opened the use of the switched network with implications not yet fully apparent.

On the other side, the AT&T had "...a paramount interest in maintaining its share of future communications markets. The horizontal market (that is, the percentage of all households and business firms with telephones) is rapidly approaching saturation. Therefore, continued growth depends upon Bell's ability to maintain a major position in the new markets for communications services."<sup>6/</sup> It therefore fought back with price warfare in TELPAK, WATS AND WADS which by greatly reducing rates for data and mixed data voice service ATT expects will multiply revenues rapidly in the 1970's.<sup>7/</sup> Western Union has responded by entering the "computer utility" business through joining forces with a non-common carrier computer company

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<sup>6/</sup> Trebing, op. cit., p. 311.

<sup>7/</sup> TELPAK rate reductions ranged from 51 percent to 85 percent of pre-existing private line rates. ATT estimates that by 1980 a "low" common carrier revenue from leased line mixed voice/data services would be five times those of 1965 or \$1,200 million, while switched network data service would rise eight times to \$1,898 million. President's Task Force on Communications Policy, Staff Paper I. A Survey of Telecommunications Technology, June, 1969, Appendix A, p. 38. Hereafter cited as "Task Force Technology Report."

and through specialized offerings of shared computers and lines.<sup>8/</sup> General Telephone and Electronics Corporation and the United Utilities System (the second and third largest telephone operating groups) have established non-common carrier data processing affiliates.

Moreover the landscape is dotted with proposals and pressures for further erosion of the old monopoly corporation-market-technology unities. Most spectacularly, the Ford Foundation, Columbia Broadcasting System and American Broadcasting Company have proposed to operate domestic communications satellites to provide program transmission service in competition with the common carriers. And AT&T seems to have conceded this breach in the traditional market structure by a statement in October, 1969 in favour of a policy of competition for the domestic satellites -- a proposal which was later made by the White House in a "memorandum" to the FCC.<sup>9/</sup> Meanwhile, the application of microwave and coaxial cable technique to the extension of TV service produced the CATV industry which, with the determined supporting thrust of the electronics industry, is taking on common carrier characteristics outside the existing telephone industry and offering the possibility of wired broadband services ranging from broadcast programs to banking and telephone and telegraph, on a city-wide and eventually nationwide basis.

The President's Task Force on Communications Policy's recommendations did not have the force of law and depend for their implementation on being adopted by Congress or the FCC. They are significant however, of policy directions currently being considered. They recommend strongly against the preservation of traditional market boundaries, and they cut deeply into the old notion that the nation

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<sup>8/</sup> The joint venture is with Computer Utilities, Inc. The new services are SICOM for subscribers in the stock market industry and INFOCOM (a generalized version of sharing) to all private leased customers.

<sup>9/</sup> Bell stated that it "believes the wisest public policy at this time would be to permit any organization or group interested in establishing a domestic satellite system -- including the networks -- to apply for a license to establish and operate such a system." 35 Telecommunications Reports, October 20, 1969, p. 5. The White House memorandum was dated January 23, 1970.



may safely trust its communications services to the wisdom of a monopolistic corporation -- even the ATT with its "one system, universal and interdependent" structure and policy. In approaching the common carriers, the Task Force was guided by the premise "... that unless clearly inimical to the public interest, free market competition affords the most reliable incentives for innovation, cost reduction and efficient resource allocation. Hence, competition should be the rule and monopoly the exception."<sup>10/</sup> Referring to the "great ferment in the industry and pressures for new entry and more competition," the Task Force Staff Paper on Domestic Carriers questioned the healthiness of a "closed structure" in which "most services and markets are still largely closed to firms other than the established common carriers...."<sup>11/</sup> More concretely the Task Force Final Report recommended that

"Responsible public policy should be directed towards maintaining and modernizing traditional methods for regulating the monopoly sector of the industry -- the integrated network of public message telephone services -- while prudently releasing the competitive energies of the industry elsewhere."<sup>12/</sup>

The Task Force specific recommendations would implement this principle in three ways. Domestic communications satellites, it proposed, should be permitted to provide specialized services (e.g., wide band, wide-area data exchange networks, TV network distribution

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<sup>10/</sup> Task Force Final Report, chap. 6, p. 7.

<sup>11/</sup> Task Force Domestic Carrier Report, p. 116.

<sup>12/</sup> Task Force Final Report, chap. 6, p. 52.



and occasional video networking) on a competitive basis with common carriers, in addition to the use of the satellites by common carriers.<sup>13/</sup> The issue of service reliability and quality could be resolved in the market place for such services where the buyers were businessmen accustomed to buying services on specifications from among various sellers. Secondly it recommended that common carrier tariff barriers be removed to permit suppliers of private line services, both for hire and user-owned to interconnect with each other and with common carrier private line local loops, terminal gear and other equipment, subject to reasonable conditions to protect the systemic integrity of the switched network and national security.<sup>14/</sup> Thirdly, it recommended that remote-access data processing or teleprocessing be presently free from public-utility regulation. The telephone companies should not be permitted to offer teleprocessing, but should

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<sup>13/</sup> Referring to the private line services, they said, "We see several advantages to making available more potential business opportunities in these markets. New kinds of services offering a wide range of quality, capacity and price levels might be developed and tested in response to varying needs of particular user groups, thereby enhancing the likelihood of greater consumer satisfaction in these areas. And technological advances, such as microwave equipment produced in competitive equipment markets, might be more rapid if introduced by numerous private line suppliers. Finally, additional competitive pressure, even if confined to supplementary services, could be an important factor in gauging and maintaining high performance in this industry....As we note in our domestic satellite chapter, a number of attractive prospects exist for specialized satellite services (e.g., wide band, wide-area data exchange networks, TV network distribution and occasional-use networking). These might be offered on a competitive basis, in addition to the potential role of satellites in the basic long lines common carrier network." Task Force Final Report, chap. 6, pp. 12-13.

<sup>14/</sup> Ibid., pp. 22-26.

be confined to the switched public message network and related services. Store-and-forward data processing should not be offered by the telephone companies nor treated as a common carrier and Western Union should be unregulated in teleprocessing.<sup>15/</sup>

The argument of this analysis has been that the monopolistic corporation was in the 19th Century a viable agent, or building block, for the implementation of the national responsibility for telephone and telegraph service. It was viable because its technology and market structure was isomorphic to the monopolistic corporation. Technology in the past quarter century has replaced the monopolistic corporation with a deliberate mix of markets (monopolistic and competitive) as the basis of national telecommunications policy in the United States. To be sure inertial factors, prominent among which are resistance from telephone corporations and the divided federal-state jurisdiction, inhibit the United States from carrying the separation of markets further -- a factor dealt with in other chapters of this report.

The actions and recommendations which have opened up to some degree competitive markets in data and mixed data-voice, as well as voice private line operations have been taken against the stern and resourceful resistance of AT&T. But for the monolithic and pervasive influence of that nationwide monopoly organization, there can be no doubt that the competitive markets (i.e., non-switched network services) would be much larger and freer than they now are in the United States.

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<sup>15/</sup> Ibid., pp. 29-46.

But let us examine the technology more closely. On the surface, in terms of business organizations, it appears that the difference between voice and record(data) telecommunications has disappeared. Equipment available generally as a result of the technological explosion of the last twenty-five years, permits data and voice communications to be conducted alternatively over the same equipment. At a deeper level, it appears that such a blending of the techniques exacts a high and presently unknown price for such interchangeability and that it would be more economical to optimize costs and benefits by providing voice and data services through parallel networks and channels with only a necessary de minimis overlap where the benefits exceed the costs. It is possible that the United States telephone policy, by permitting AT&T to try to meld the digital and analog technologies within the same corporate frame is forcing the telephone rate payers to cross-subsidize the inefficiencies of the melding process. If this be true, then the implication of the United States experience is that the markets which are becoming the building blocks of telecommunications policy should be more severely constrained by the economies of the voice versus data technologies. What is the evidence?

The voice telephone technique transmits analog signals using frequency division multiplexing for long distance transmission (less efficient than digital multiplexing) and the repeaters in the transmission system amplify background noise and cross talk as well as the desired signal. As compared with digital transmission, analog transmission is economical of bandwidth. The data or record technique

transmits digital signals using time division multiplexing and the repeaters in the transmission system ignore the background noise and transmit clean signals. The two systems are presently incompatible: When the voice telephone network handles digital signals they must be converted to analog form at the terminals, and a digital network would have to convert voice signals to digital form. The cost of making the voice network universally compatible with digital signals would be enormous and the cost of operating a digital network through a voice system is very high. The Task Force Staff Report on Technology says that if expected technological advances take place in the 1970's it may be economical to build the entire telecommunications network around digital transmission.<sup>16/</sup> Both the Technology report and the Domestic Carrier Report of the President's Task Force recommend that presently the attractive solution to the handicaps which data processors encounter would be a digital sub-network that would have its own time-division switching and multiplexing facilities, but would share the

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<sup>16/</sup> "With respect to analog versus digital transmission methods, two technological breakthroughs expected in the 1970's promise expanded use of digital systems. Redundancy removal techniques may reduce bandwidth requirements for certain wideband services. In addition, large-scale, integrated circuitry promises to cut the costs of today's digital hardware significantly while increasing speed of operation and improving reliability. If both these advances occur, the entire telecommunications network may eventually be built around digital transmission. Until that time, however, we expect a parallel development of digital and analog technology, with the former principally used in low-grade cable and twisted wire circuits in cities and in very long-distance circuits because of its ability to operate effectively on noisy links." Task Force Technology report, p. 37. The information on incompatibility of digital and analog systems given above is drawn from pp. 31-33.



present network's local distribution loops and long-lines facilities.<sup>17/</sup>  
 The implication of a reduction by more than 50 per cent of the costs per customer of a special digital network in the United States should be understood in the context of the cheapness of long-haul circuitry through satellites. The Task Force Final Report did not address itself to the question whether the conflict between the technologies of voice and data involved uneconomic cross-subsidization or other excessive costs for the voice network as against the data-users in the AT&T modem melding technique.

The signs of development of digital networking independent of traditional common carriers have already become impressive. Datran has applied to the FCC for permission to build a dedicated data transmission switched network interconnecting 35 of the larger cities in the United

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<sup>17/</sup> "A system optimized for data communications could switch and multiplex digital signals more cheaply than the present analog network and, at the same time, offer lower error rates and a wider selection of bandwidths. Furthermore data users would no longer have to buy digital to analog modems." Task Force Domestic Carrier Report, p. 78.

"Nevertheless it may be possible to provide data users with a digital system, without either requiring analog users to adapt to a digital network or foregoing entirely the economies of joint usage between analog and digital communicators. The distribution lines of data customers could bypass the local exchanges, which must receive signals in analog form, and enter a separate digital, time-division switch. Signals of this digital subnetwork could also by-pass the frequency multiplexing facilities in the long distance terminals since time-division switches can multiplex signals directly for long-distance transmission. Thus, digital signals could enter long-haul transmission facilities directly, whether these were dedicated channels on transmission facilities shared with the analog network, or a special digital long-haul network such as might be provided by a multiple access satellite system. Users of the digital sub-network would have to pay perhaps 10% more than analog customers for the distribution loops and transmission lines they would share. This surcharge would reflect the additional cost to the network of maintaining separate distribution cables for digital customers in the same trench or conduit as analog users. The preceding chart takes account of these additional costs and still suggests savings of greater than 50% from handling data subscribers on a special digital network." Task Force Technology Report, p. 49.



States (at a total cost in the order of \$375 million) with the aim of providing customer-to-customer service in digital form. MCI has proposed to interconnect existing specialized microwave common carriers in a nationwide network, partly to satisfy the requirements of the educational institutions for low cost data transmission services. And proposals have been made for the use of communications satellites for a low-cost business-oriented nationwide communications network service.<sup>17a/</sup>

The satellite-computer technology requires government definition of functional entities in domestic telecommunications as an essential instrument of national policy. The private monopolistic corporation must now be subordinate to such policy.

The emphasis on the economies of long haul transmission which satellites provide and the latent demand for inexpensive and specialized circuitry on the part of teleprocessors has forced consideration of the question: What is the functional relation of transmission to the terminal and switching functions in telecommunications? Must they all be in one organization, or is it possible that public ends would be served by having a single transmission entity which would serve as a pipeline for all telecommunications, including the monopolistic networks and the competitive services? What, essentially, is the relation of the transmission technology (either voice or data) to the organizational options available to a nation? Clearly the communications satellites dramatically emphasize the relative abundance of long-distance channels which the new technology makes available at lower costs. There is evidence of two kinds with respect to the sharing of use of long distance communications channels. End-to-end sharing of the same long distance channels has been the practice in the TransCanada

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<sup>17a/</sup> See Notice of Proposed Rulemaking, FCC Docket 16979, Adopted April 1, 1970. Regulatory and Policy Problems presented by the Interdependence of Computers and Communications Services, p. 8.

Telephone System and overseas telecommunications by submarine cable, high frequency links and communications satellites. The protection of systemic integrity as a technical matter has been demonstrated for decades to be no serious bar to such joint use of the same channels.

What about side-by-side sharing of long distance channels by different services? Within the same organization it has been the practice of the voice telephone network in North America to accommodate such sharing, again with the protection of systemic integrity. Is such sharing practicable technically and operationally between different organizations offering the same or different types of services simultaneously? Since 1945 or thereabouts, just such sharing has been practiced between AT&T and Western Union, for in that period AT&T has leased to Western Union a major share of the long-distance circuitry used by the latter company. In 1962 the formation of COMSAT by the United States government amounted to the creation of a specialized transmission entity which transmits different classes of traffic for different common carriers simultaneously through the same satellites. In the TAT-4 case in 1964, the FCC ordered that although one entity was authorized to construct and install a transatlantic submarine cable, its capacity was to be shared by three or more carriers who would own and use it simultaneously for three modes of transmission: Voice, record and mixed voice-data.<sup>18/</sup> Telesat Canada is still another example of a specialized transmission entity intended to accommodate different services for different common carriers or other organizations. The problem of ownership for shared use of telecommunications facilities was long ago settled: Indefeasible right of user is sometimes used; sometimes the problem is avoided with long term leases.

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<sup>18/</sup> American Tel. and Tel. Co., 37 FCC 1151 (1964).

A more recent example of a proposed transmission entity was recommended by the President's Task Force Report for international communication. Presently, U.S. international communications provide voice or record or mixed voice-data services via submarine cable, high frequency links and Intelsat. Engaged in these services are AT&T, ITT World Communications, RCA Global Communications, and Western Union International. The Task Force recommended that a new single entity should be created to perform the basic international transmission functions for all the services and all the carriers. It would be "no more than a transmission highway or pipeline with few major facilities and assets."<sup>19/</sup> It would perform no retail service functions, but be permitted to deal directly with users.<sup>20/</sup> It should have no manufacturing affiliation, direct or indirect, but would have an in-house R. and D. capability. It would own the cables and cable heads with switching equipment, satellite ground stations, and COMSAT's interest in the satellites. The Task Force Final Report did not address itself to the question of ownership of the transmission entity, although the Staff Report on International Communications analyzed the problem. (See Appendix A.)

Because the transmission entity proposal by the Task Force illustrates a proposal which the author had independently developed, the relevant arguments advanced by the Task Force Staff Report (omitting the unique arguments relating to the structure of U.S. international

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<sup>19/</sup> Task Force Final Report, Chap. 2, p. 35.

<sup>20/</sup> Ibid., p. 48.

common carriers) may be paraphrased and summarized in domestic terms. The single entity would not be committed to any particular technology and hence could make sounder system choices. It would have available to it the satellite, cable and other technological options and exploit fully the available economies of scale. Large economies of scale exist in satellites, in the ground stations that serve them, in cables and to a lesser extent in high-frequency radio facilities and in switching. Incentive would be pressed on the transmission entity by the advocacy of large, sophisticated users, such as the telephone network, and by the manufacturing level of the communications industry.<sup>21/</sup> Government regulation and supervision would be improved because it could address a single transmission entity; the entities offering network or specialized services could be regulated even-handedly when none of them controlled the transmission links. Lacking terminal service functions and manufacturing affiliations, the transmission entity would be relatively compact and of moderate size; hence manageable from a regulatory standpoint.<sup>22/</sup> The governing principle justifying

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<sup>21/</sup> "The satellite manufacturers have been responsible for the major advances in communication satellite technology. The importance of military and other government space programs as a spur to innovation in the communications field is also, and should remain, exceedingly significant. The history of commercial satellite communications supports the view that the manufacture of satellites is a progressive, and despite the rather small number of manufacturers, a reasonably competitive industry. It should become more so with the development of a substantial foreign capability in satellite design and manufacture." President's Task Force on Communications. Staff Report, Organization of the United States International Communications Industry, p. 13. Hereafter cited as Task Force International Report.

<sup>22/</sup> In terms of investment, long-distance domestic transmission in the U.S. "represents a small fraction (about 17%) of the total cost of the telephone network, while switching (45%), terminals (23%), and local loops (15%) account for the rest." Task Force Technology Report, p. 7. The text refers to the Task Force International Report, pp. 107-109.



the creation of the transmission entity "would be that applicable generally to all situations where public policy has found the need for a public utility monopoly -- to confine the monopoly to the functions which in their nature require unity of operation."<sup>23/</sup>

Finally, the creation of the transmission entity should not be understood to be a perpetual or irrevocable franchise; if the technology of the future makes possible other more desirable arrangements, the transmission entity should be modified or eliminated.<sup>24/</sup> The proposal thus avoids the error of the implicit permanent franchise to the domestic telecommunications monopoly corporations and rests the organizational forms on the requirements of the technology and public interest.

The transmission entity proposal for U.S. international communications was opposed firmly by AT&T, and for the same fundamental reason that it resists the incursions of competitive markets in telecommunications, namely its traditional view of itself as custodian of the telephone system. Canada may learn both positively from what pro-competitive forces have tried to do in the United States even if unsuccessfully, and negatively by observing the reasons for the resistances which block them. The transmission entity proposal offers us a model on the principle of functional specialization of organizational structure for domestic telecommunications.

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<sup>23/</sup> Task Force International Report, pp. 99-100.

<sup>24/</sup> Ibid., pp. 128-129.



Foreign and domestic policy considerations associated with satellite communications technology make spectrum management a prime tool of national policy. Linked with capability for R. and D. and for critical studies of system optimization, spectrum management is a prime tool of national telecommunication policy. The private monopolistic corporation now must be subordinate to that policy.

Thus far we have examined the market-technology aspect of telecommunications as it bears on organizational forms and public policy, and the functional relationship of the transmission to terminal applications of telecommunications as it also bears on organizational forms and public policy. A third parameter requiring attention is the frequency allocation function as it relates to organizational forms and public policy.

The massive applications of telecommunications art through what the United States refers to as the Safety and Special Services, as well as common carrier and broadcasting in the past quarter century have produced in that country a structure for spectrum management which is fragmented (as between government uses and other) and diffused through the government structure at relatively low levels. Asking what are the appropriate roles for the Federal government in relation to telecommunications, the President's Task Force Final Report answers that traditionally government has viewed telecommunications primarily as a mission-support function, rather than a focus for public policy. The result, they found, was that policy has evolved as a "patchwork of limited, largely ad hoc responses to the specific issues, rather than a cohesive framework for planning.<sup>25/</sup>

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<sup>25/</sup> Task Force Final Report, Chapter 9, p. 2.

They accordingly recommended that unified responsibility for spectrum management be established at a high level in the government and that policy develop improved methods of frequency allocation. (Appendix B.) The same organization would have a long-range planning, policy-formulating and coordinating capability, and would integrate research and development work presently fragmented among various agencies of government.<sup>26/</sup> It also recommended improvements in the Communications Act with respect to common carrier regulation and increased budgets for FCC staff engaged in such regulation.

Giving effect to the differences between the United States (with its dense industrial development, especially in uses of the radio frequency spectrum, and with its dense and interlocked constitutional system) and the Canadian scene, what are the implications of this phase of the technology-organization-policy context? In principle there is merit to considering in the Canadian telecommunications regulatory framework the desirability of a three inter-related changes:

(1) An organizational centre at a high level in the regulatory organization for spectrum management with capacity to do in substance what the Task Force proposed in the United States. (2) A focus for R. and D. work in telecommunications at a similar level. (3) A "Critical Agency", at a similar level, which would have a capability

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<sup>26/</sup> "What is required, in brief, is an adequately funded focus for the centralized responsibility for spectrum management..., a center capable of coordinating government research and development in spectrum problems and for the provision of guidance and evaluative frameworks for a variety of communications-related pilot programs; a focus capable of responding to requests for technical advice and assistance on procurement matters, either from other agencies or from State and local governments; and a center for the provision of technical assistance and the development of new concepts and procedures in connection with regulatory policy." Task Force Final Report, chap. 9, p. 28.

and responsibility to do critical long-range studies,<sup>27/</sup> design experiments and pilot projects in telecommunications applications, and to serve as ombudsman to criticize the operational performance of organizations performing telecommunications functions in Canada. United States experience suggests that no one of these three be subordinate to the others, and that the Critical Agency should be responsible through a Minister directly to Parliament.

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"The overall need, then, is for a long-range planning, policy-formulating and coordinating, and mission-support capability which can serve to integrate the various roles in which the Executive Branch is presently engaged. To its tasks, the proposed entity would bring the skills of engineers and scientists capable of analyzing the applicability of technological developments in terms of both component performance and systems design; and of lawyers, economists and statisticians capable of engaging in industry studies and, in cooperation with technical personnel, long-range technological, cost and demand forecasting." President's Task Force Final Report, Chapter 9, p. 28.

### Summary

This analysis of the U.S. experience with the large factors of technology, industrial or government organization, and public policy, suggests that massive technological pressures associated with the satellites and computers have moved the national policy away from its 19th Century style of depending upon the private monopoly corporation as the sufficient agent of national telecommunications policy.

(1) Increasingly the technology has generated competitive pressures which have substituted the definition of markets (be they monopolistic as in the case of the switched network or competitive as in the case of the leased lines, user-owned microwave systems, and specialized common carriers as in the MCI case) for reliance on the monopolistic industry-wide corporation with its nation-wide averaging of costs and prices for all services. The AT&T and to lesser effect the smaller monopolistic common carriers have given ground slowly and reluctantly to the competitive pressures, with consequent opportunity cost to the nation in competitive opportunities unrealized which would otherwise have become reality.

(2) Increasingly it becomes evident, when one considers the pressures which communications satellites have exerted domestically and internationally on organizational forms, that long-distance transmission of communications is technologically best handled through a specialized entity for that purpose. Networks and competitive-market users may buy their circuitry from such a transmission entity, with

greater realization of economies of scale and system optimization for the national telecommunications system as a whole than with any other model at the present time.

(3) The intimate association of high foreign and domestic policy with the decision making on future telecommunications development demands that spectrum management be conducted from a high and central location in the governmental structure. Only in this way may national policy be best served and the spectrum managed wisely, given the current necessity to consider investment in satellites and other communications plant as part of the planning for all phases of national life.

(4) In the reciprocal relation between national policy needs and the technology of telecommunications, it is now evident that a research and development capability at or near the locus of frequency management decision-making is essential. The engineers can only address their art to the problems posed to them. And the lesson from the U.S. experience with aerospace activity and particularly communications satellites and computers is that there should be an integrated R. and D. capability at a high level in the government.

(5) Complementary to the foregoing conclusions is the obvious one that there should be a capability for critical studies of an interdisciplinary kind, devoted to studies of system optimization, the options available to policy and technology and frequency management, and the like, located at or near the locus of communications



policy formation. Such a function, here termed a Critical Agency, might be thought of as having two kinds of duties. One would be the long term, far-ranging studies just alluded to. The second, and complementary to the first, would be short range studies which are here referred to as the ombudsman duty. A substantial degree of independence from the operation of telecommunications is necessary for assuring the usefulness of such a Critical Agency.



## CHAPTER I

### Review of the History of Rate and Service Regulation of Telecommunications in the United States

As the Introduction indicated, before one can regulate rates and services of telecommunications industries, there must be definition of the national policy in terms of the purposes and means of the activities in question. "Industries" must be defined. Markets must be defined in terms of their nature (monopolistic or competitive). The economic analysis of purposes, industries, and markets is one order of regulatory tasks and at that level the introductory chapter was a summary of rate and service regulation of telecommunications in the United States. The task of Chapter I is to review structures and processes employed in the United States to provide (i.e. govern) telecommunications services. The historical analysis in Chapter I will consider (a) origins of regulation in the history of common carrier-public relationships; (b) theoretical justification for regulation; (c) operational experience with regulation, and (d) effects and results of regulation.

#### (a)

#### Origins of Regulation in the History of Common Carrier-Public Relationships

##### Wire telegraphy

The wire-telegraphy technology, like its organizational parentage, was originally modelled on postal service. As with

postal service, so the wire-telegraph was a mode of transporting a message, stage by stage, to its destination. The United States, like other rising nation-states in the 17th to 19th Centuries, looked to its postal service to take advantage of the Industrial Revolution and the new technology it was yielding. Intrigued by the examples of France and England which had introduced extensive optical telegraph systems (semaphore signal stations on towers six to twelve miles apart) since the 1790's, and frustrated by the fact that for lack of rapid communications the last and only major battle in the War of 1812 had been fought in New Orleans after the treaty of peace ending the war had been signed, the United States War Department began to explore the possibilities of an optical telegraph line to connect Washington with New Orleans in the 1820's. Its questionnaire directed to university professors encouraged S. F. B. Morse who had been working on the possibility of an electrical telegraph. Morse's research and development costs were borne by the Post Office which in 1845 opened commercial telegraph service between Washington and Baltimore. The decisive year, as far as wire-telegraph policy was concerned, was 1846 when Congress ignored the plea of the Postmaster General that "...the public interest, as well as the safety of the citizen requires that the government should get the exclusive control of [telegraph] by purchase, or that its use should be subjected to the restraint of law."<sup>1/</sup>

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<sup>1/</sup> Thompson, Robert L., Wiring a Continent, Princeton, Princeton University Press, 1947, p. 33.

The existing facilities were turned over to private hands in 1846. At that time there were 40 miles of telegraph line; by 1848 there were 2,000 and by 1850, 12,000. Hundreds of companies were organized to build telegraph lines quite independently of railroads. The Morse patents were licensed to promoters on a loose geographical basis and they hastened, with shoddy construction, to stake out the extensive shape of their would-be business empires. By the end of 1847 nine companies had lines extending as far west as Chicago and running south to New Orleans as well as north to Portland, Maine. Rival companies were organized to exploit the House and Bain patents and these lines were often parallel to those of the Morse patentees. In the struggle for position between the different companies (and Morse patentees fought each other as well as the other patentees) all the means available were employed (bribery, court injunctions, publicity, rate-cutting, physical violence). By 1851, the survival struggle turned to rationalizing the industry and a long series of cartel-type alliances began. At the same time contractual relations were established with railroads to their mutual advantage. By the mid-fifties, the nucleus of what became the Western Union Telegraph Company emerged; through a lengthy series of mergers and consolidations it became the dominant enterprise by 1866.<sup>2/</sup> Inspired by a plan for partial government participation in the telegraph industry (through the Post Office) which had been considered intermittently since the 1860's, Postal Telegraph Company in the 1880's became a serious rival to Western

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<sup>2/</sup> Thompson, op. cit., passim.



Union. These two companies merged in 1943.

For most of its first century Western Union typified the classic description of the evils of monopoly under conditions of low business ethics. Pricing policy was classically monopolistic except when predatory prices were used to ruin competitors, as a prelude to a merger at which the stock was typically watered. Service was restrictive in availability<sup>3/</sup>, in quality<sup>4/</sup>, and in terms of market development<sup>5/</sup>. The industry burdened its employees with "low wages, long hours, and unhealthful working conditions".<sup>6/</sup> It maintained

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<sup>3/</sup> The Postmaster General, Government Ownership of Electrical Means of Communication, Washington, G.P.O., 1914. Hereafter referred to as Government Ownership Report. "Telegraph facilities have not been extended to the small towns and villages along with the Government postal facilities, nor has the cost of the service been reduced [as] would seem to be warranted by the increasing volume of business transacted."

<sup>4/</sup> There was "A low quality of service, including errors in transmission, failure to maintain the secrecy of messages, and many glaring instances of long-delayed messages." Goldin, H. H., "Governmental Policy and the Domestic Telegraph Industry," The Journal of Economic History, Vol. 7, No. 1, May, 1947, p. 58.

<sup>5/</sup> Between half a million and a million persons, or less than 1 percent of the population used the telegraph according to Western Union's president in 1890. "46% of the total business is purely speculative -- stock-jobbing, wheat deals in futures, cotton deals in futures, pool room, etc.; 34% is legitimate trade; about 12% is press business, and about 8% of it is social." Quoted by Parsons, Frank, The Telegraph Monopoly, Philadelphia, C. F. Taylor, no date [1899], p. 37 from testimony by President Green of Western Union Telegraph Company before the House Committee on Post Offices and Post Roads on the Wanamaker bill, 1890, pp. 41, 56.

<sup>6/</sup> Goldin, ibid., p. 58.

mutually protective relations with wire-service news agencies and individual newspapers (refusing service to newspapers which tried to develop competitive news agencies or which published unfriendly news while the dominant wire service and individual newspapers suppressed news stories adverse to Western Union's corporate interest) and with railroads, hotels and other agencies which placed competitors at severe handicaps.<sup>7/</sup> It corrupted legislators with free passes and other means.<sup>8/</sup> It watered its stock and paid excessive dividends from its profits<sup>9/</sup> which amounted from 1866 to 1885 from 30 to 40

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<sup>7/</sup> Goldin, ibid., p. 58.

<sup>8/</sup> In his annual report to stockholders for 1873, the president of Western Union said: "The wires of the Western Union Company extend into thirty-seven states and nine territories within the limits of the United States, and into four British provinces. In all of them our property is more or less subject to the action of the National, State and municipal authorities, and the judicious use of complimentary franks among them has been the means of saving to the company many times the money value of the free service performed." Quoted in Parsons, op. cit., p. 93.

<sup>9/</sup> "In 1884, when Western Union's capitalization was approximately \$80,000,000 a Senate Committee estimated that the company's plant could be reproduced for \$30,000,000. While only \$2,000,000 of its common stock was issued for cash sale, Western Union between 1866 and 1899 distributed approximately \$40,000,000 in stock dividends and about \$57,000,000 in cash dividends." Goldin, ibid., p. 58.

John Wanamaker, Postmaster General in 1890 said that "An investment of \$1,000 in 1858 in Western Union stock, would have received up to the present time, stock dividends of more than \$50,000 and cash dividends equal to \$100,000 or 300 percent of dividends a year." United States Post Office Department, An Argument in Support of the Limited Post and Telegraph, Washington, G.P.O., 1890, p. 5. (Hereafter referred to as Wanamaker Report.)

cents of the revenue dollar.<sup>10/</sup> It also performed a "conspicuous failure to advance the telegraph art. At the end of the nineteenth century, Western Union's operations were still based almost entirely on the Morse key."<sup>11/</sup> Finally, it should be noted that in its heyday, Western Union's Board of Directors resembled a sort of General Staff of corporate power.<sup>12/</sup>

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<sup>10/</sup> Goldin, *ibid.*, p. 57, quoting the Annual Report of the President of Western Union for 1893.

<sup>11/</sup> Goldin, *ibid.*, p. 58. Wanamaker, as Postmaster General, said, "I have had enumerated perhaps a score of devices already patented for the purpose of cheapening and quickening the telegraph service, which find no use and no profit under the present conditions. I am sure that many of these inventions are good, but they cannot be got into operation with the field monopolized. The public cannot have the benefit of this rare class of brains, nor can the inventor find a deserved remuneration for their work. The Western Union Company having control of the telegraph business has no use for devices which cheapen and quicken the telegraph service and warrant a claim for reduction of rates (at least if the adoption of the invention would throw the present lines and machinery out of use to a large extent, and so cut a slice out of the company's investment, making considerable expenditure necessary for a new plant in harmony with the improved methods of transmission). The public, not knowing what it misses, cannot become aroused to the defects in methods now in vogue. If once a break is made in this rampart of telegraph monopoly, not only will the men and women who build and use the telegraph find a better market for their skill, but inventors, knowing that their cases are to be tried before an impartial court, will also find a spur to better efforts." Wanamaker Report, p. 11.'

<sup>12/</sup> In 1890 it included: Jay Gould, Russel Sage, William W. Astor, J. P. Morgan, P. R. Pyne, C. P. Huntington, Fred L. Ames, Sidney Dillon, Thomas T. Eckert, Chauncey M. Depew, George J. Gould, Edwin Gould, Charles Lanier, Austin Corbin, John G. Moore, Henry F. Flagler, Dr. Norvin Green, Samuel Sloan, George B. Roberts, Sidney Shepard, Erastus Wiman, John T. Terry, Cyrus W. Field, John Vanhorne, A. B. Cornell, Robert C. Clowry, Henry Weaver, William D. Bishop, James W. Clendenin, John Hay. Parsons, *op. cit.*, p. 60.

The apex of Western Union's market and political power came in the 1880's and 1890's. By the first decade of the 20th Century, the rival technology and corporate structure of the telephone industry had surpassed it in both respects. Thereafter the obsolescence of Western Union's technology (and its incapacity to do effective R. and D. work<sup>13/</sup>), the handicap of its intimate relations with the major railroads<sup>14/</sup>, the inertial momentum of its decentralized and generally incompetent management, low labour standards and bad public relations combined to facilitate the substitution of telephone and air mail postal service for an increasing share of the market for rapid communications. Politically, the decisive lead was taken by the telephone industry in bringing commission regulation to bear on the whole telecommunications industry. Not until 1910 (when Western Union was for a time a subsidiary of the AT&T) were telegraph and telephone communications brought under the terms of the Interstate Commerce Act for regulation by the Interstate Commerce Commission. In the ensuing 14 years such regulation was

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<sup>13/</sup> Western Union did not become seriously interested in innovating radio telegraph into its system until after 1943 although the art was then nearly half a century old.

<sup>14/</sup> In 1943 testimony in the merger proceedings before the FCC disclosed that from 10 to 15 years were required for Western Union to renegotiate one of its contracts with a railroad. A plain-language paraphrase of one of those contracts ran more than 100 pages of typescript. They covered an interlocking of operations which effectively made Western Union a prisoner of railroad technology, so long as Western Union relied on lines strung along railroad rights of way.



nominal.<sup>15/</sup> State commission regulation of telegraph under the commissions which were given jurisdiction after 1905 was similarly ineffective. We will return to consider commission regulation after 1934 at a later point, but first in order to understand the later experience it is necessary to ask how Western Union's behaviour in the 19th Century can be explained. Under what policies of the nation-state did it happen as it did? What was the response of the nation to Western Union's behaviour in the 19th Century?

Under the United States constitutional system, the state governments reserved to themselves the right to issue charters.<sup>16/</sup> As pointed out by Earl Latham,

"In the nineteenth century, the management of the economy passed largely from the state into the hands of private enterprisers. The charters of the seventeenth century were instruments by which private persons served public purposes; the nineteenth-century charters became instruments by which private groups used the state in the enrichment of private interest. Or rather, it may be said that this was the consequence at the end of the century of a process that started rather slowly. In the early years, 'it was not considered justifiable to create corporations for any purpose not clearly public in nature; each application was considered by itself, and if favorably was followed by an act of incorporation.' The great

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<sup>15/</sup> "It cannot be too strongly emphasized, however, that, until the establishment of the Federal Communications Commission in 1934, regulation was formal only. Aside from setting up a uniform system of accounts, the I.C.C. exercised little supervision over telegraph." Goldin adds a footnote: "Commissioner Joseph B. Eastman testified before a Senate Committee that the Interstate Commerce Commission had no departments, bureaus, or divisions that dealt exclusively with telegraph, telephone, or cable, and that few cases involving these services had ever been heard by the commission." Citing 71st Congress, 2d Session, Hearings before the Committee on Interstate Commerce.... on S.6 (1930), p. 1, 566, 1572-1585. Goldin, op. cit., p. 61.

<sup>16/</sup> The comparatively few federally chartered business corporations, such as COMSAT, TVA, etc. depend constitutionally on powers delegated by the state to the federal government, e.g. over interstate and foreign commerce.



change in the basic relation of the state and private interest in the control of the economy came with the abandonment of the special act of incorporation and the adoption of general incorporation laws for special classes of corporations. The climax was reached in some states when permission was accorded in advance for incorporation 'for any lawful purpose'. At the same time the competition of the states with each other for the privilege of giving away privileges to the corporations produced a great relaxation of the safeguards by which the rights and interest of the public were preserved and protected in the earlier limitations. For example, directors were given the authority to reshape the capital structure of the corporation at will, and only a few states enforce the principle of accountability to the state for the manner in which the corporation exercises its franchise."<sup>17/</sup>

In the social process context of the development which Latham describes, the principal factors contributing to this result were the availability of a rich continent, ready to be exploited once hegemony over it had been established<sup>18/</sup>, the suitability of the limited liability joint stock company as a device which facilitated the accumulation of small-holders' capital in sufficient quantity to innovate the technology.<sup>19/</sup>

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<sup>17/</sup> Latham, Earl, "The Body Politic of the Corporation," in Mason, Edward S., The Corporation in Modern Society, Cambridge, Harvard University Press, 1966, p. 222. The quotations within the passage are cited as Davis, John P., Corporations, Their Origin and Development, New York, 1905, p. 269.

<sup>18/</sup> See de Voto, Bernard, The Year of Decision, 1846. Boston, Little Brown, 1943.

<sup>19/</sup> Livermore points out that previously what he calls "de facto" corporations had been increasingly common as subterfuges to avoid conspiracy charges under the common law. The "de facto" corporations differed from the later legal corporations only in that they did not enjoy enforceable limited shareholders' liability. Livermore, Shaw, "Unlimited Liability in Early American Corporations," Journal of Political Economy, Vol. 43, 1935, p. 674-687.

and the individualistic, materialistic ethic embodied in Jacksonian democracy. Western Union Telegraph Company was one of the first exemplars of the large private monopoly organizational form.<sup>20/</sup> In viewing its performance as a whole, it is notable that it did perform a surrogate function for the nation state not only in implementing the laissez-faire policy domestically, but in external relations. The acquisition by the United States of Alaska from Russia in 1867 was a direct result of the activity of Western Union Telegraph Company.<sup>21/</sup>

It must also be noted for later consideration that the same state governments which issue such liberal corporate charters also enjoy the constitutional right to regulate intrastate commerce (under the general police power).

It was in this context that the issue was faced in Congress in 1846, whether to continue the telegraph in the Post Office or not.

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<sup>20/</sup> By 1861 less than a dozen states had general incorporation laws and in that year most manufacturing was organized in individual proprietorships and partnerships rather than corporations. By the 1870's general incorporation laws were so common that special legislative charters were rare. From that time forward, incorporation was looked on not as a privilege but a right. The private corporation was regarded as a "person" by the Supreme Court in Santa Clara County vs. Southern Pacific Railroad Company, 118 U.S. 394, in 1886 for the purpose of the protection afforded by the 14th Amendment to the United States Constitution ("...nor shall any State deprive any person of life, liberty or property, without due process of law;"). See Encyclopedia Britannica, Vol. 6, pp. 527-28. Chicago, E.B. Inc., 1967.

<sup>21/</sup> Hiram Sibley, President of Western Union, while negotiating with the Russian government for rights to build a telegraph system through Russian territory in North America, across Russia and thence to Western Europe, learned of the possibility that the Czar might sell the Russian territory in North America, and arranged the deal. See Encyclopedia Britannica, Vol. 20, p. 464, Chicago, E.B. Inc., 1967.

Henry Clay wrote in 1844:

"It is quite manifest it [the telegraph] is destined to exert great influence on the business affairs of society. In the hands of private individuals they will be able to monopolize intelligence and to perform the greatest operations in commerce and other departments of business. I think such an engine should be exclusively under the control of the Government."<sup>22/</sup>

Postmaster General Johnson, within months of the Congressional abandonment of the telegraph to private hands, reported in similarly strong terms.<sup>23/</sup> And it was not on constitutional grounds that the decision turned, because even the arch-strict-constructionist,

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<sup>22/</sup> Government ownership report, p. 28.

<sup>23/</sup> "In my last annual communication I brought to your notice this extraordinary invention of Prof. Morse for the transmission of intelligence; its importance in all commercial transactions to those having control of it; and to the Government itself, particularly in a period of war. I then expressed the opinion that an instrument so powerful for good or for evil could not, with safety to the citizen, be permitted to remain in the hands of individuals uncontrolled by law. Another year's experience gives additional weight to the opinions then expressed.

"Telegraph lines have been established from New York to Boston, Buffalo, Philadelphia, Baltimore, and Washington City; and others are in contemplation from this city south and from Buffalo west, and will be extended to the principal cities of the Union in a few years. It now enables those controlling it to transmit intelligence instantaneously between the different cities where it has been established, and to the important commercial points in the South and West several days in advance of the mails. The evils which the community may suffer, or the benefits which individuals may derive from the possession of such an instrument, under the control of private associations or incorporated companies not controlled by law, can not be overestimated....It is the settled conviction of the undersigned that the public interest, as well as the safety of the citizen, requires that the Government should get the exclusive control of it, by purchase, or that its use should be subjected to the restraints of law." Ibid., p. 19.

Senator John C. Calhoun had no doubts on the issue.<sup>24/</sup> No rhetoric on behalf of private monopoly in the telegraph survives in the literature; having the votes to win their way, protagonists of monopoly did not articulate a rationale except by example.

In the event, the response of government agencies at the federal, state and local levels in the United States to the behaviour of Western Union Telegraph Company was to do nothing effective to curb or control it. State and local governments accommodated the monopoly with charters, franchises and ordinances giving legal sanction to their operations and facilities. The courts were available to those who wished to contest the rights and duties of a common carrier as against the behaviour of the telegraph company. There were numerous state commissions with legislative fact-finding and unofficial arbitration procedures. As part of the so-called "Granger movement" many mid-western states attempted to regulate railroad behaviour and some attempted to regulate telegraph company behaviour. Their efforts were "largely ineffectual because of the predominantly interstate character of the telegraph business" over which the states did not have jurisdiction.<sup>25/</sup> As far as the 19th Century was concerned,

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<sup>24/</sup> In quoting him in ex parte Jackson, the Supreme Court of the United States unanimously held that the telegraph came within the grant of power to establish the post office. In that opinion it said: "The powers thus granted are not confined to the instrumentalities of the postal service known or in use when the Constitution was adopted, but they keep pace with the developments of time and circumstance. They extend from the horse with its rider to the stage coach; from the sailing vessel to the steamboat; from the coach and the steamboat to the railroad, and from the railroad to the telegraph, as these new agencies are successively brought into use to meet the demands of increasing population and wealth." Ibid., p. 29.

<sup>25/</sup> Goldin, op. cit., p. 58.



however, the remedies available to those who sought redress for grievances against the telegraph monopoly seem not to have been effective; they left no significant legacy of action or doctrine on the subject.

While the public got no effective action from its governmental levels to cope with the untoward behaviour of Western Union in the 19th Century, there was indeed a great deal of effort put into trying to reverse the decision of 1846. Between then and the end of the century more than 70 bills were introduced into Congress for the purpose of re-establishing the telegraph system in the Post Office. Nineteen times, committees of the House and Senate reported on such bills, seventeen times favourably. None were even brought to a vote in either House.

It was easier for the telegraph industry to get Congressional action to help it. Anticipating the onset of the Civil War, Congress in 1860 passed a bill to facilitate construction of a telegraph line from Missouri to San Francisco.<sup>26/</sup> It guaranteed that the Government would spend at least \$40,000 a year for ten years on service over this line -- which was how Western Union reached San Francisco in 1861.

A sequel took place in 1866 when a bill was introduced providing for the (federal) incorporation of a National Telegraph Company with special privileges to combat the existing telegraph monopoly. The legislative history later used by the Department of

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<sup>26/</sup> 12 Stat. 41. June 16, 1860.



Justice indicated that the theory of the bill was that the way to avoid the evils of monopoly was to stimulate competition.<sup>27/</sup>

The patents on the principal instruments used in telegraphy were to expire in 1868 and a new company was to move into the market. The bill reported out of committee in response to the referral of this proposal was, however, quite different. The Post Roads Act of 1866, recommended by the committee and adopted by Congress, permitted any telegraph company organized under the laws of any state to build and operate telegraph lines over the public domain, military or post roads of the United States. Such companies were given land grants and the right to use materials taken from the public domain they traversed. Telegraph messages sent by Federal Government departments were to receive priority over other traffic and should be sent at rates to be fixed annually by the Postmaster General. The one concession made to public ownership advocates was the provision that after five years from the date of passage of the Act the United States might purchase such telegraph lines at an appraised price "for postal, military or other purposes."<sup>28/</sup> The opposition to the shelved bill,

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<sup>27/</sup> "The question is, is there any remedy for high prices against a monopoly? I believe but one remedy has ever been discovered for such a case; and that remedy is competition. The only way to reduce fares upon railroads is to build more railroads. The only way to reduce the charges of telegraph companies is to build more telegraph lines." Senator Stewart, 72 Cong. Globe 3484, quoted in Berge, Wendell, Assistant Attorney General, Memorandum of Law on the Post Roads Act (mimeo, undated).

<sup>28/</sup> 14 Stat. 221, July 24, 1866.

and support for the passed bill rested on ideological grounds.<sup>29/</sup>  
 Western Union Telegraph Company accepted the benefits of the Post Roads Act in 1867. By sheltering the telegraph monopoly with the Post Roads Act, Congress effectively stopped the state legislatures from enacting laws hostile to it.<sup>30/</sup>

Possibly the most difficult thrusts of its critics for Western Union to meet came from Postmaster John Wanamaker, himself a successful merchant, between 1888 and 1892. At that time a considerable political force seemed to have gathered in favour of breaking the grip of the telegraph monopoly.<sup>31/</sup> Wanamaker repeatedly

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<sup>29/</sup> Senator Guthrie, spokesman for the telegraph monopoly, opposed the first bill because "It interferes with existing corporations in the land....I do not think under this system of government we have any business with such legislation in Congress." "Let us not interfere with the enterprise and capital of the people and the arrangements which the states have made for transmitting information....I think this Government has quite enough to do to manage the national affairs, without interfering with the internal affairs of the States, which belong properly to State jurisdiction and State regulation." Berge, op. cit.

<sup>30/</sup> In the Berge brief, this argument is developed. In Pensacola Telegraph Company v. Western Union Telegraph Company, 96 U.S. 1 (1877) the Supreme Court upheld the constitutionality of the Post Roads Act. Western Union had incorporated under Florida law. A competitive telegraph company, previously chartered under Florida Law, sought to enjoin Western Union's construction in Florida, alleging its own exclusive right. The Supreme Court held that the Pensacola company charter was null and void, relying on federal occupation of the jurisdictional field through the Post Roads Act. Other cases to the same effect were cited by Berge.

<sup>31/</sup> Frank Parsons who led the Public Ownership League, counted two political parties and more than two million men who by vote and petition had supported a government telegraph in the 1890's. The Farmers' Alliance and Industrial Union, the National Grange, the Knights of Labor, the Railway Union, the American Federation of Labour, the International Typographical Union, the People's Party, and the Prohibitionists had supported it. Chambers of Commerce and Boards of Trade in New York, Philadelphia, Denver, Pittsburgh, Richmond, Kansas City, Jersey City, and other cities had supported it. At least four state legislatures had petitioned Congress for it. Amongst prominent economists who supported it were Richard T. Ely and E. R. A. Seligman.

urged Congress to permit the Post Office Department to contract with telegraph companies to furnish telegraph lines, equipment and operators at post offices and to transmit messages at rates fixed by the government, all of the revenue from which would go to the telegraph companies except 2 cents per message which would be retained by the Post Office to cover the expense of collection and delivery. He even obtained the agreement of a syndicate of New York capitalists to provide such facilities and service.<sup>32/</sup> But to no avail.

In light of its success in staving off its critics, it is understandable why Western Union did not emulate the railroads in encouraging the federal government to help rationalize rates, service and facilities when the Interstate Commerce Commission was established in 1887. Operating in a duopoly situation with Postal Telegraph Company, a subordinate factor in nationwide private pool agreements, Western Union did not need such help to manage its own affairs.<sup>33/</sup> Western Union came under modern state regulation beginning in 1907, and under federal regulation in 1910 as a result of AT&T initiatives at a time when it was controlled by AT&T.

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<sup>32/</sup> Government ownership report, pp. 25-27; Parsons, op. cit., p. 36.

<sup>33/</sup> Western Union admitted such pooling. Cf. testimony, President Norvin Green, House Committee on Post Office and Post Roads, Hearings on the Wanamaker bill, p. 2, 1890.

## Telephone

In contrast to the technology of telegraphy, the telephone technology is not modelled on transportation. Rather it centers on the interconnection of terminal stations by circuits running through switching centres. It is not the transportation of a message, but the provision of circuits between terminals which is the service produced.

Against the backdrop of the preceding analysis of Western Union, the development of the telephone industry as an unregulated common carrier down to 1910 may be told more briefly. The Bell Telephone system became a reality because of a mutually exclusive definition of industry markets arrived at in the laissez-faire jungle



in 1879.<sup>34/</sup> Not only did Western Union admit the validity of the Bell

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<sup>34/</sup> "When Bell and his associates offered service to the public in 1877 (the year after he received his patents), their resources were meager. Powerful, well-established, and well-versed in the means for subjugating puny rivals, Western Union Telegraph Company promptly moved to establish control over telephone service. It bought telephone patents from Thomas Edison and Elisha Gray in 1877 and began to build exchanges to compete with Bell. In some cities it bought controlling interests in the companies which were organizing to operate under licenses from Bell. Bell retaliated by bringing suit for patent infringement in 1878. The relative strength of the two parties was so unbalanced that Western Union might well have expected an easy victory. Indeed, the story goes undenied that in 1878 the Bell group was so hard pressed that they offered to sell their patents to Western Union for \$100,000 and the offer was rejected.

"It was at this point that a fortuitous array of rival forces in the laissez-faire climate of late nineteenth-century America erected a protective shelter for the innovation of the telephone. Western Union's very strength turned out, paradoxically, to be its greatest weakness. At the time, the Vanderbilts, William H. and Cornelius, owned stock control of Western Union. The generous profits enjoyed by that company's near-nationwide telegraph monopoly had attracted the aggressive attentions of Jay Gould. He had for a few years been developing a rival telegraph system. By 1877 Western Union, respecting the growing strength of this competitor, the Atlantic and Pacific Telegraph Company, purchased it. No sooner, however, did Western Union, having apparently quieted the Gould threat, turn its attentions to the Bell group than Gould returned to the attack.

"On May 15, 1879, 8 months after Bell brought suit against Western Union, Gould launched another attack upon Western Union in the telegraph field by the organization of the American Union Telegraph Company. With the aid of/able stock-market manipulators, and through the columns of his "New York World," Gould attacked the credit of the Western Union and drove its stock quotations down. Apparently, he availed himself of every conceivable weakness of the telegraph company's position, one of which was its pending suit with the Bell Telephone Company. Gould also began buying telephone exchanges operating under Bell licenses, with an implied threat to throw his financial support behind the telephone's competitive threat to Western Union's telegraph monopoly.'

"Within 15 days after the formation of the American Union Telegraph Company, Western Union approached the Bell group with an offer which created the necessary conditions for the innovation of telephone. Western Union admitted the validity of the Bell patents and agreed to withdraw from the telephone field." Smythe, Dallas W., The Structure and Policy of Electronic Communications, Urbana, Ill., University of Illinois, 1957, pp. 24-5. The quoted passage within the excerpt was from Federal Communications Commission, Report of the Investigation of the Telephone Industry in the United States, Washington, G.P.O., 1939, p. 125. Hereafter this document will be referred to as Telephone Investigation Report.



patents and agree to stay out of the telephone market, but during the following 17 years Bell was to have the use of all telephone patents owned by Western Union and the latter company was to pay Bell 20 percent of the cost of any new telephone patents developed by Bell. In return, Bell promised to stay out of the telegraph market, to buy Western Union's telephone facilities and to pay Western Union 20 percent of the rentals received for the use by its licensees of telephone instruments for a period of 17 years.

From its beginning, AT&T profited from the mistakes of the telegraph industry. Whereas the latter had permitted patents to get out of monopoly control and had to establish markets through other means, the Bell system was built on patents.<sup>35/</sup> It used them to protect and advance its objective of a nationwide interwoven system with the Bell Company dominant. Accordingly, it licensed the patents to operating companies at the state or exchange level through license contracts which gave Bell financial control through dominant stock ownership and substantial income through license fees as well as

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<sup>35/</sup> "One of the first things that was fully developed in our minds was the necessity of occupying the field; not only that but of surrounding ourselves with everything that would protect the business, all the auxiliary apparatus, the development of all kinds of apparatus for the development of the business, which was a very important feature....As I say, at that time the patent [first Bell patent] was not adjudicated upon, and there was some doubt as to whether it would be sustained or not, and we simply continued our efforts to surround the business with all the auxiliary protection that was possible, in order to make it indifferent to us whether the patent was extended or not." Alfred Vail, quoted in Daniellian, N. R., The AT&T, New York, Vanguard, 1939, pp. 95-6.

dividends, while simultaneously mobilizing local capital to largely finance the plant expansion of the licensed companies. The basic structure had two other elements. A long-lines department was established when long-distance service became technically attractive, thus melding the operating companies into a nationwide network. And AT&T bought control of Western Electric from Western Union in 1882 to serve as equipment supplier to the Bell system. In the course of time the whole was tied together by a triangle of contracts. The license contract which tied the operating companies to the holding company; the manufacturing contract which tied the Western Electric manufacturing company to the holding company; and the supply contract which tied the operating companies to the manufacturing company.

Bell rate policy from the beginning depended on "value of service", distinguishing between the commercial and residential subscribers, between urban markets of various sizes, and between urban and rural markets.<sup>36/</sup> Confining service to the richest markets, it amounted to classical monopoly pricing in the period of patent monopoly, 1878-1893. During that period the declared dividends

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<sup>36/</sup> The initial rates were \$20 a year for "social service" and \$40 a year for business users; flat rates were later supplemented by measured service. Trebing, Harry M., op. cit., p. 303n.

averaged 15 percent per annum.<sup>37/</sup> Intercity service was slow to develop; Boston and New York were not provided long-distance service until 1884, New York and Philadelphia until 1895, and New York and Chicago until 1892. During the patent monopoly period, the average annual rate of increase in number of telephone stations in service was 6 percent. Although as noted above, Bell was always intensely concerned with patent protection it appears not to have done significant R. and D. work in the period of patent monopoly.

Following 1893 when the basic patent expired, the telephone industry experienced an amazing growth as a result of direct competition between independent telephone operating and manufacturing companies and the Bell System. In contrast to the average annual increase in numbers of telephone stations in the preceding 15 years of 6 percent, the average from 1894 to 1907 was 25 percent per annum.<sup>38/</sup>

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<sup>37/</sup> "This policy of restricting national telephone development by monopoly prices set so high that one-half of the new capital requirements was obtained from reinvested earnings and one-half supplied chiefly from the sale of \$15,000,000 in stock to stockholders who had received \$25,000,000 in dividends, served to make the Bell system independent of outside capital resources. It resulted in a tight monopoly which was highly profitable to its New England stockholders. It is significant that, during this period of monopoly control of the telephone industry, the declared dividends averaged over 15 percent per year, while the actual investment return was nearly 46 percent." Federal Communications Commission, Proposed Report Telephone Investigation, Washington, G.P.O., 1938, p. 138. Hereafter referred to as Walker report.

<sup>38/</sup> Computed from Walker report, p. 143.

The proportion of telephone stations owned by independent companies rose from zero in 1893 to 49 in 1907.<sup>39/</sup> More than half (55 percent) of the communities with telephone service in 1902 received telephone service exclusively through lines of the Bell or independent companies; duplication of service in the same community was thus not preponderant.<sup>40/</sup> With competition prices fell. The average revenue per Bell station fell from \$88 a year in 1895 to \$43 in 1907.<sup>41/</sup> And Bell felt it necessary to reduce rates in non-competitive exchanges to about the level in competitive markets.<sup>42/</sup> During the competitive period, as during the monopoly period ending in 1893, the Bell System did not develop the art through fundamental research and independent technical development aided competitors against the Bell system.<sup>43/</sup> In its struggle to restore its monopoly position,

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<sup>39/</sup> Bureau of the Census, *Census of Electrical Industries - Telephone* (1932), quoted by Gabel, Richard, "The Early Competitive Era in Telephone Communication, 1893-1920," *Duke University School of Law, Law and Contemporary Problems*, Part I, Vol. 34, Spring, 1969, p. 344.

<sup>40/</sup> Gabel, *op. cit.*, p. 345.

<sup>41/</sup> *Ibid.*, p. 345-6.

<sup>42/</sup> *Ibid.*, p. 346.

<sup>43/</sup> The Strowger switch, which made possible automatic telephony, the loading coil, making possible long distance telephony, the Cooper-Hewitt mercury-arc repeater, and the three-element vacuum tube -- four innovations of major importance, took place outside the Bell System in the competitive period. The telephone hand-set ("French" telephone) had been invented by a Western Union employee in the 1880's and was innovated in France decades before the United States. See Walker report, Chapter 7.

the Bell system relied heavily on refusal to interconnect (a policy which as noted in Chapter I it still uses effectively), patent infringement suits against independent companies, a rapid expansion of the extent of its own market, refusal to sell equipment to non-Bell companies or on the open market, attempts to buy control of independent manufacturers, and propaganda campaigns directed against independent companies.<sup>44/</sup> It attacked and defeated a major attempt of independent telephone operating companies to enter the inter-city (long-distance) market when it prevented from obtaining bank support the Widener-Elkins and Rockefeller-Stillman interests who proposed to organize the Telephone, Telegraph and Cable Company of America.<sup>45/</sup>

In the absence of effective public policy to the contrary, the competitive period of telephone development generated a powerful movement toward monopoly which for a time breached the tacit division between the telephone and telegraph markets until corrected by antitrust action. The combination of reduced telephone rates and vast capital requirements for plant expansion during the competitive period<sup>46/</sup> outran Bell's capacity to finance expansion from earnings and forced it to seek extensive underwriting of new capital issues. The result was that the Morgan-Baker investment banking interests

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<sup>44/</sup> Telephone investigation report, pp. 133-4.

<sup>45/</sup> Ibid., pp. 130-2.

<sup>46/</sup> Between 1895 and 1905 Bell System assets nearly quadrupled, rising from \$120 million to \$435 million. Gabel, op. cit., p. 352.



took control of the Bell System in 1907. The resulting policy which has prevailed to the present was to promote and protect a nationwide monopolistic system. A first task was to terminate the competitive warfare between the Bell and independent telephone companies and to try to incorporate the Western Union Telegraph System into the telephone empire. Bell curtailed expansion of its own facilities in 1907 and began buying existing independent company facilities.<sup>47/</sup> Simultaneously it reversed its policy against selling telephone equipment to independent telephone companies, thus increasing Western Electric's sales and reducing the incompatibility problem when Bell took over independent company facilities. Upon complaint by the independent telephone companies, the Antitrust Division forced Bell in 1913 to stop buying control of competing companies and to begin to interconnect its system with those owned by independents if the latter met Bell System technical specifications.<sup>48/</sup> The purchase of stock

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<sup>47/</sup> The proportion of all telephone stations owned by independents which had been 49% in 1907 fell to 41 percent by 1912 and continued to fall until about 1940. Gabel, op. cit., p. 352. The annual average increase in numbers of telephone stations which had been 25% from 1893-1907 fell to 8 percent, 1908 to 1913.

<sup>48/</sup> The action was the so-called Kingsbury Commitment. Bell was left free to buy non-competing telephone facilities which it continued to do. Bell and the independents joined in procuring the passage of the Willis-Graham Act of 1921 which permitted merger or consolidation of competing telephone companies on mutually agreeable terms. Gabel, op cit., pp. 352-353, and Act of June 10, 1921, ch. 20, 42 Stat. 27.

control of Western Union took place in 1909 and followed an unconsummated deal by which the Bell would have merged with Postal Telegraph Company.<sup>49/</sup> On complaint by Postal Telegraph Company, the Antitrust Division forced the Bell System to divorce itself from Western Union Telegraph Company as part of the Kingsbury Commitment in 1913. The national pro-competitive policy thus re-established the isomorphic relation of the telephone organizations (dominated by the Bell System) and the telegraph organizations to their respective markets for voice and record communications.<sup>50/</sup>

In addition to the antitrust movement, the Bell System in 1907-13 had to be aware of the potential of the public-ownership movement. The latter continued to be supported by populists well into the 20th Century. The Wilsonian "New Freedom" program included the investigation of public ownership of telephone, telegraph and radio. In response to a Senate Resolution of January 12, 1914, the Postmaster General submitted a report which recommended

"(1) That Congress declare a government monopoly over all telegraph, telephone, and radio communication and such other means for the transmission of intelligence as may hereafter develop.

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<sup>49/</sup> Both of these deals involved intricate negotiations between the common carriers and investment bankers. Their history is summarized in Walker report, pp. 97-101.

<sup>50/</sup> At some time earlier Bell had begun leased line telegraph service. It was permitted to buy control of the Teletype Corporation in 1930 and in 1931 introduced TWX service. These are exceptions to the general policy which seem not to have disturbed the United States government agencies.

(2) That Congress acquire by purchase at this time at appraised value the commercial telephone network, except the farmer lines.

(3) That Congress authorize the Postmaster General to issue, in his discretion and under such regulations as he may prescribe, revocable licenses for the operation, by private individuals, associations, companies and corporations, of the telegraph service and such parts of the telephone service as may not be acquired by the Government."<sup>51/</sup>

While no congressional action on this proposal ensued, the inclusion of radio in the recommendations was part of an important continuing chain of events. At the insistence of the Navy Department the Radio Act of 1912 included provision for Presidential seizure of radio stations in the event of war.<sup>52/</sup> Such seizure took place in 1917 and under government control of radio a surge of research and development occurred which produced the Alexanderson alternator (a device of prime importance for long distance radio communication) and which forced a major realignment of electronics markets following

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<sup>51/</sup> Government ownership report, sup. cit., p. 13. The body of the report made it clear that the telegraph system was regarded as redundant if the telephone system were operationally tied to the post office structure and employed for both telephone and telegraph operations.

<sup>52/</sup> The first substantive radio legislation in the United States, 37 Stat. L.302.

the war.<sup>53/</sup> Almost a year after the United States government had seized the railroads, Congress, by a joint resolution in July, 1918, authorized the President to assume control of the telegraph, telephone and cable systems -- an act which proponents of public ownership of telephone and telegraph regarded as final.<sup>54/</sup> The outcome of government wartime "ownership" was a clear victory for private monopoly. The government acquiesced in turning over the Alexanderson alternator to a new "chosen instrument," the Radio

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<sup>53/</sup> A subsequent Federal Trade Commission investigation reported that "There were, prior to the entrance of the United States into the World War, a number of inventions covered by patents, which could have been utilized in the manufacture of a large portion of the modern radio apparatus, and also numerous inventions covering various systems which could have been employed in rendering a more efficient transoceanic radio communication service. These patents were, however, controlled by opposing interests who refused to license one another. During the World War the necessity for efficient radio apparatus and devices for naval and military purposes became of increasing importance. As a result of Government appeal, the manufacturers, disregarding patent rights, engaged in the manufacture of radio apparatus and devices for the Government, upon the Government's guarantee to protect them against all infringement suits." Federal Trade Commission, Report on the Radio Industry, 1924, p. 14.

<sup>54/</sup> Secretary of the Navy Josephus Daniels testified that the government "should control and own telegraph, telephone and all means of communication permanently", as did also Postmaster General A. S. Burleson. U.S. House of Representatives, Committee on Interstate and Foreign Commerce, Hearings on H. J. Res. 309, 65th Cong., 2nd Sess., July 2, 1918. AT&T discreetly did not appear at these hearings.



Corporation of America<sup>55/</sup> which was created as part of a world-wide cartel arrangement which reassorted markets and patent rights for the post-war markets.<sup>56/</sup> Under the fiction of government operation which a cost-plus management contract afforded it, AT&T obtained rate increases valued at between \$40 and \$50 million annually, and discredited public ownership by propaganda which blamed the wartime deterioration in service and increased rates on the United States government.<sup>57/</sup> When this had been accomplished, AT&T was finally free of worry about government ownership.

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<sup>55/</sup> Captain S. C. Hooper, who handled negotiations for the Navy later testified, "We gave them [RCA] advice and we urged them on. And I might say that we thought we were doing a great thing, to help get up a great American company to compete with the British monopoly in communications....The way the matter turned out, it may appear unfortunate in some ways that I advised the RCA in such manner that a monopoly in the receiver trade patent situation resulted. This made the company appear to be an undesirable money-making monopoly -- and many people believe it is -- but the receiver trade is not of interest to me. Had this not occurred, the country would have taken great pride in the R.C.A. communications company, and Congress would probably by now have assisted them in every way possible. The company, with the American position in shipping, and in aviation, would have been considered as one of three great advantages gained for this country due to the war." Hearings on S. 6, 71st Cong., 1st Sess., pp. 317-321.

<sup>56/</sup> Out of which A.T. & T. came with a monopoly of the use of radio telephony for person to person communications. See Federal Trade Commission report sup. cit. and Smythe, Dallas W., The Structure and Policy of Electronic Communications, pp. 48-51.

<sup>57/</sup> Daniellian, N. R., op. cit., Chap. 11.



In 1907 the Bell System had staked out its policy for protection of its monopoly conception of its destiny around the related policies of (1) committing itself to improvement of the art of telephony, (2) a universal and unremitting pursuit of good public relations, and (3) encouraging and guiding public regulation of the industry. The creation of Bell Telephone Laboratories between 1909 and 1911 undergirded the capacity of the Bell System to lead the communications industry (down to the aerospace-computer era beginning in the 1950's) in innovative capacity as a result of a program of long range fundamental research. The Bell System was the pioneer in the United States in the skilful use of propaganda as a high form of corporate policy beginning in 1909. It explicitly rested its case for monopoly on the superior service and reasonableness of rates for which it should be accountable and responsible to the public. Astutely, this accountability was to be performed through its words and deed in everyday operation rather than through legalistic or formalistic review by the government as the latter's surrogate. Employing all manner of means and occasions,

"The public relations policies of the Bell System have been developed for the purpose of protecting its investment and maintaining the profit opportunity presented by the communications field. The stated policy of the system is to give the best possible service at the least possible cost consistent with financial safety. Cultivation of public confidence is sponsored to diminish public criticism and thus increase the social, economic, and political stability of the Bell System. The System's public relations policies are based upon a long-range cultivation of public opinion through various means....It was during

this period, 1910-1913, that the new management under Theodore N. Vail embarked upon the policy of educating the public in the advantages of telephony as developed by the Bell System. The policy of humanizing a vast corporation was begun and still continues. It has been clothed with a service ideology. The vast resources of a nation-wide business were recruited in the task. Today the Bell System's aim of protecting its investment in the communications field, and maintaining and increasing its revenues, makes itself felt in the field of public relations through a policy utilizing three primary means: indoctrination, economic contacts and political activities."<sup>58/</sup>

This was the context in which public regulation came to the telephone and telegraph industry. It was as part of its analysis of Bell System public relations that the FCC telephone investigation report stated:

"By 1910, competition had been eliminated insofar as it threatened seriously the profits of the system. The Bell management was sufficiently far-sighted to realize that a nation-wide telephone monopoly could not be achieved in the absence of competition as insurance against extortion unless some degree of public regulation were provided. The annual reports of the American Co. for the years 1908, 1911, and 1912, indicate an acceptance of public regulation as a substitute for effective competition. The hope was expressed that the State regulatory commissions would adopt the judicial attitude, would be permanent, and therefore less susceptible to public pressure."<sup>59/</sup>

The first of the current generation of state regulatory commissions with jurisdiction over telephone and telegraph were created

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<sup>58/</sup> Telephone investigation report, p. 475.

<sup>59/</sup> Ibid., p. 475.

in New York, Wisconsin and Georgia in 1907. Commissions with jurisdiction over telephone and telegraph now exist in 48 states, the District of Columbia and Puerto Rico. The first federal commission regulation of telephone and telegraph common carriers began with the Mann-Elkins Act, 1910. There is evidence that the moving agents for the latter action came from the communications common carriers and that the Bell System helped set up the state commissions.<sup>60/</sup>

The Federal Communications Commission in 1934 succeeded to the duties which the Interstate Commerce Commission had been given, when the Communications Act of 1934 was enacted. The relevant powers conferred on it by that act were those concerning common carrier regulation and the licensing of the non-governmental portions of the radio spectrum as it bears on common carriers. We defer to section (c) consideration of the experience under modern state and federal regulatory commissions.

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<sup>60/</sup> "The history of the federal enactment is peculiar in that the original legislative proposal was intended solely to confer appellate jurisdiction over ICC decisions concerning railroad matters on a Commerce Court. In twenty-six parts of the hearings before the House Interstate and Foreign Commerce Committee, there is no testimony or mention of the communication industry. The original bill, as reviewed by the committee, was amended on the floor of the House to confer authority on the ICC over 'telephone, telegraph and cable companies.' Representations of the Bell System with regard to this proposal were made informally. The position of the independent industry was also favorable....During those years, it [the Bell System] furnished legislative consultants to 'help and advise' state and federal legislators and to maintain continuing liaison with regulatory commissioners and their staffs." Gabel, op. cit., p. 357.

(b)

Theory of Rate and Service Regulation

The theory of rate and service regulation began with the justum pretium and the mercantilist common law doctrine that an enterpriser in a common calling (e.g. a common carrier) had an obligation to serve all who came safely, without personal discrimination and at a fair price in return for which, his monopoly position would be tolerated or protected. About 1670 Sir Matthew Hale, Lord Chief Justice, in De Portibus Maris and De Juris Maris characterized ferry boats, wharves and cranes in port towns as "affected with a public interest", and attached these rights and duties to them. In 1877, in Munn vs. Illinois, the United States Supreme Court invoked Lord Hale's doctrine in upholding an act of the Illinois legislature which set maximum rates for Chicago grain elevators.<sup>61/</sup> Subsequently, a vaguely defined class of business, referred to as "businesses affected with a public interest," developed through judicial practice. Common carriers (e.g. railroads, telephone, telegraph) are a sub-set of this class of business, often treated in legislation and by the courts as coming under a body of administrative law common to a

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<sup>61/</sup> 94 U.S. 113.



larger sub-set, known as "public utilities."<sup>62/</sup>

The "theory" of rate and service regulation which was implicit in the state and Federal Communications laws ran thus. The subject to be regulated is an enterprise (typically a corporation). It chooses to enter an industry which is a "natural monopoly." It is required to have a certificate of public convenience and necessity by which it dedicated itself to that industry and obtained assurance that competitive enterprises would not be permitted to enter the industry. Having committed its capital to an operating physical plant, it is obliged to offer service without undue discrimination and under safe conditions. The prices which it might charge for its services should produce sufficient income in the aggregate to meet its long-run costs including the cost of the recurrently necessary inputs of capital to replace worn-out or obsolete plant. In order to determine the reasonableness of the general level of rates, it is necessary to review expenses, including such intangibles as depreciation. In passing on the validity of particular operating expenses, the test should be "prudence". Further, the general level

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<sup>62/</sup> The fuzziness of the "public utility" concept may be illustrated by a textbook definition. "They are (a) free from business competition to a substantial degree, and are often pure monopolies; (b) required to charge only reasonable rates that are not unjustly discriminatory; (c) allowed to earn but are not guaranteed a reasonable profit; (d) obligated to provide adequate service to the entire public on demand; and (e) closely associated with the processes of transportation and distribution." Garfield, P. J., and Lovejoy, W. F., Public Utility Economics, New York, Prentice-Hall, 1964, p. 2.



of rates should yield over and above these costs an allowance for a fair return (profit) on the equity investment. While each sub-market served by the enterprise should bear its assignable direct costs, the indirect costs might be assigned according to the "value of service" in the respective sub-markets. In order that the regulatory commission could enforce the law, a uniform system of accounts should be prescribed and followed by the enterprise. If the regulated company disagrees with commission actions affecting it, appeal to the courts is provided for.

That this theoretical model is simplistic must be conceded.<sup>63/</sup> It appealed to the diverse interests of passionately reformist leaders such as Robert LaFollette of Wisconsin, and of shrewd businessmen such as Theodore Vail, President of AT&T, when the commissions were started. Its simplicity made it a sort of Thematic Apperception Test in which diverse interests could project the kind of behaviour which served their interests. To the extent that Richard T. Ely and other economists in Wisconsin and Michigan helped to formulate it, the model bears a striking resemblance to Alfred Marshall's theory of the competitive firm in long-run value determination, which was then the prevalent concern of economic theorists in the first decade of this century when the public utility concept was roughed out.

To facilitate our later consideration of the experience of

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<sup>63/</sup> It is none the less valid. See: Task Force Common Carrier Report, pp. 39-41; Posner, Richard A., "Natural Monopoly and Its Regulation," Stanford Law Review, February, 1969, vol. 21, pp. 592-593.

the regulatory commissions and the effects of their work, the assumptions which underlay the theoretical model should be identified and briefly explained.

(1) It was assumed that the subject to be regulated was an enterprise, not a market or series of markets. We have noted in the introduction that this was a crucial assumption, appropriate in the 19th Century, but obsolete now in telecommunications.

(2) It was assumed that regulation is a judicial process which operates on a case-by-case basis. Given the sharp division between reformers who wanted to nationalize telephone and telegraph and businessmen who sought to protect their monopoly property and profits, this was understandable at the time. With a fast-moving technology such as exists in 1970, the case-by-case approach to regulation could only be justified if general guide lines emerged from the cases -- guide lines appropriate to the implications of the evolving technology.

(3) It was assumed that the function of the regulatory commission was passive and negative and that the management of the regulated company had the prerogatives of planning industry development, financing it, determining the mode and content of investment in plant, procurement of equipment, supplies and services of all kinds, initiating new services and pricing them. Herein lay a grave paradox: If regulation were to be effective from the public point of view it must invade managerial prerogatives. If a commission forces

management unwillingly to make an important decision will it thereafter protect management from stockholder suits alleging management's fiduciary responsibility to stockholders to use its best judgment? In any event, the judicial posture of the commissions make such "invasion" of management's prerogatives unlikely.

(4) It was assumed that, as a judicial proceeding, the opposing parties would be able to present their cases competently. In other words, it assumed that a sort of countervailing power existed in the regulatory setting between the industry on the one hand and the representatives of the general public on the other. The fact is that while the industry is well-equipped to protect its interests before the regulatory commissions, the consumers are typically unorganized, uninformed<sup>64/</sup>, inadequately staffed with competent expertise and unrepresented.<sup>65/</sup> The hope of many reformers that the staffs of the commissions would be advocates of consumers' interests more often than not have been unrealized either because the staffs shared the industry viewpoint or were subject to constraint to behave in a quasi-judicial way by their employers, the commissioners. The ombudsman function of the commissions then went unfulfilled.

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<sup>64/</sup> Speaking of the state commissions, Wilcox says, "The commissions, however, make little effort to inform consumers concerning their availability to perform this service [take up consumer complaints]. Most consumers, in fact, are unaware that such commissions exist." Wilcox, Clair, Public Policies Toward Business, Chicago, Irwin, 1955, p. 503.

<sup>65/</sup> I refer here to general rate and service proceedings; those which directly involve businessmen as customers, as in the TELPAK proceedings, are more suitably structured.

(5) It was assumed that the commission would be competent to perform its functions promptly. As will be noted below, most of them most of the time have not been. Deficiencies in the statutes, in the political character of the appointees, in the adequacy in numbers and quality of commission staff, and the almost endless capacity to litigate of corporations account for the failures.

(6) It was assumed that the guidance and regulation of the industries in light of public interests in firm behaviour and in equitable treatment would be effective concerns of the courts which reviewed the commission decisions. In fact the courts acted to protect property interests<sup>66/</sup>

(7) It was assumed that telephone and telegraph were in their entirety "natural monopolies" (meaning an industry of high overhead costs, imposing inconvenience on customers under competitive conditions). A corporation operating in such an industry was equivalent to a "natural monopoly." In fact, local telephone exchanges

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<sup>66/</sup> "It was the courts that asserted their right to review the work of the commissions, stripped them of necessary powers, and reversed their decisions, always to the end of preventing or cancelling reductions in rates. The explanation of their action is not far to seek. According to Bauer, 'the judges had been appointed extensively from prominent lawyers with successful corporation practice, who were heavily impregnated with private business perspectives. They had little consciousness of the public aspects of industry and little concern for the protection and advancement of public interest. Throughout the judicial domain, the dominant attitude was one of guardianship toward property and of vigilance against legislative and administrative encroachments.' It was thus by judicial action that the emphasis in regulation was shifted from the protection of consumers to the protection of property." Wilcox, op. cit., p. 575. Quoting John Bauer, Transforming Public Utility Regulation, 1950, p. 125.



and local loops were the full extent of such "natural monopoly". Intercity transmission and switching for telephone and all of the telegraph operations were not technologically "natural monopolies", if interconnection of competitive companies serving the same or inter-related markets was provided. Moreover, antitrust law in the United States has held that while regulated companies may hold monopolies (e.g. patents, radio licenses, etc.), they may not be permitted to violate the antitrust laws by acting as monopolists.<sup>67/</sup> As noted later, Congress specifically made the antitrust laws applicable to communications common carriers in this respect.

(8) The fundamental assumption is that monopoly will perform like a competitive business when regulated.

"It is an ingenious, though somewhat naive, synthesis whereby society can enjoy the benefits of competition by abolishing it; and avoid the evils of private monopoly by creating and legalizing it. In short, one can have monopoly and not have it at the same time. This seeming contradiction, it is assumed can be resolved by public regulation, which will function as a catalytic agent to reconcile private monopoly with the public interest."<sup>68/</sup>

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<sup>67/</sup> Papandreou, A. G. and Wheeler, J. T., Competition and Its Regulation, New York, Prentice Hall, 1954, pp. 306-7.

<sup>68/</sup> Gray, Horace M., Hearings before the Antitrust Subcommittee of the Committee of the Judiciary, House of Representatives. 84th Cong., 2nd Sess. Monopoly Problems in Regulated Industries, Part 1, Vol. 1, 1956, pp. 76-88.



(c)

Operational Experience with Regulation

The bulk of the regulatory problem regarding telephone and telegraph in the United States lies in the jurisdiction of the states; the federal government has directly regulatory authority over a small portion. About one-fourth of the telephone industry activity is under federal jurisdiction. That is, of all \$15,072 million in telephone service revenues of the Bell System in 1969, about \$3,768 million (entirely interstate toll service) was under Federal Communications Commission jurisdiction, while \$11,304 million was under jurisdiction of the various states. Local telephone service revenues of the Bell System of \$7,774 million, which were under state jurisdiction were more than twice as large as the revenues under federal jurisdiction, while intrastate toll service revenues of \$3,530 million, also under state jurisdiction, were almost as large as the revenues under federal jurisdiction. If one turns to investment a similar imbalance appears. Of the Bell System's depreciated book cost of \$38,009 million at the end of 1969, more than \$28 billion were under state jurisdiction, while less than \$10 billion were under FCC jurisdiction.<sup>69/</sup>

The leverage which the federal regulation can employ derives from

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<sup>69/</sup> Bell System data from Annual Report to Stockholders, AT&T, 1969. The percentage under federal jurisdiction comes from testimony by the Commission, Hearings on S.607, Subcommittee on Intergovernmental Relations of the Committee on Government Operations, U.S. Senate, 91st Cong., 1st Sess., Part 2, March, 1969, p. 276.

national political decision-making and from the influence which the federal government can exert over the innovation of the most advanced technology, e.g. communications satellites, microwaves, etc.

The state regulatory commissions have been overburdened with nominal duties and undersupplied with resources to discharge them. Of the 50 states in the Union, 49 regulated telephone and 47 regulated telegraph activities in 1964. Approximately the same number regulated railroads, common carrier trucks, gas utilities, electric utilities and contract carrier trucks while smaller numbers had additional regulatory duties.<sup>70/</sup> The immense span of their nominal duties is indicated by a survey conducted by the Senate Subcommittee on Intergovernmental Relations in 1966:

"The survey showed that most state commissions were charged with regulation of dozens, and in many cases hundreds, of electric, gas, telephone, telegraph and water companies, in addition to hundreds, and in some cases thousands, of transportation utilities or carriers."<sup>71/</sup>

The regulation of telephone and telegraph activities is therefore only a small part of the responsibilities of the state regulatory commissions.

Even if their sole responsibility were regulating telephone and telegraph activities, the state regulatory commissions would have insufficient resources to do the job.<sup>72/</sup> They have inadequate budgets.

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<sup>70/</sup> Phillips, Charles F., The Economics of Regulation, Homewood, Irwin, 1965, pp. 91-99.

<sup>71/</sup> Summary of Hearing Record, off-print from Congressional Record, February 26, 1970.

<sup>72/</sup> All data in this paragraph computed from Phillips, Ibid.

In 1961, 14 of the 50 state commissions had total budgets of \$1 million or more, the largest being California (\$6.5 million), Pennsylvania (\$2.3 million) and Virginia (\$2.1 million). In the same year, 11 had budgets less than \$200,000, the smallest being Delaware (\$66,000), Alaska (\$80,000), and Wyoming (\$106,000). The mean budget was \$874,000. The state commissions have very low salary scales. The salaries of commissioners in 1961 for the median state commission (Arkansas) were \$10,800 per annum. In only two states (California, \$20,948, and New York, \$24,000) were commissioners' salaries above \$20,000 per annum, while in 17 states they were less than \$10,000 (Hawaii: \$10 per diem with maximum of \$1,000; Alaska: per diem; Delaware: \$4,500; Idaho: \$7,000 were the lowest). Most state commissions have inadequate staffs. The median number of full time employees for all the state commissions was 52 (South Carolina) in 1961. In only nine of them were there more than 200 full time employees (California with 683 and New York with 561 led the list), while in 14 of them there were less than 25 employees (Delaware with 4 and Wyoming with 5 had the fewest). Further evidence of the inadequacies of the staffs comes from the Senate Sub-committee on Intergovernmental Relations:

"The survey also showed that from twenty to thirty of the commissions had two or fewer employees in the following key categories: Attorneys, rate analyst, engineer, accountant. More than half of the commissions had no security analyst. Five of the states had one or more economists on their staff. Relatively few professional staff members received salaries above \$11,000 annually." <sup>73/</sup>

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<sup>73/</sup> Summary of Hearing Record, sup. cit.

For Canadians to understand rate regulation in the United States it is necessary to explain the central judicial doctrines which have dominated the regulatory scene for public utilities (including telephone and telegraph). Referring back to the model of regulatory theory (section (b) above), the problem was to determine the overall or average level of rates in such a way that they would yield revenues adequate to cover reasonable operating expenses and produce a return sufficient to attract the recurrently necessary capital for replacement of depreciation. Under Munn v. Illinois, the Supreme Court held that this was a legislative function not subject to judicial review, but in 1894 it began to reverse itself, nullifying rates set by a state commission.<sup>74/</sup> And in 1898 in Smyth v. Ames,<sup>75/</sup> it established a "grab-bag" of criteria by which it would review actions of regulatory commissions, from which after the irrelevance of most of the criteria had become evident only three concepts remained to focus the major attention of regulatory

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<sup>74/</sup> Stone v. Farmers' Loan and Trust Co., 116 U.S. 307.

<sup>75/</sup> 169 U.S. 466 (1898).

commissions for half a century: Depreciation, original cost, and reproduction cost.<sup>76/</sup> Most of the attention of the regulatory commissions was devoted to determination of esoteric and unreal models derived from this grab bag from then to 1943. A prominent economist, Ben Lewis, puts it pungently:

"In the area of rates, the level of rates (how much the utility may receive from the sale of all its services), as distinct from the structure of rates (the distribution of the total payment among the several classes of users) has been regulation's greatest concern....

"But in breaking down the costs of providing utility service into operating and capital costs, we suddenly find ourselves confronting a strange, almost shocking situation. Operating costs for the most part are matters of record. There is some slight opportunity for dispute over the acceptability and amount of the few items, but most of these disputes have been settled long since, and the remainder cannot possibly command regulatory attention and resources for more than a few hours in any proceeding. Turning to

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<sup>76/</sup> A standard commentator remarks of this decision (169 U.S. 466, 1898): "Rates, if they are to stand, must be high enough to afford a fair return on a fair value of invested capital. But fair return and fair value are not defined. Some of the items to be considered in determining fair value are enumerated. These include (1) operating expenses, (2) earning capacity, (3) the market value of stocks and bonds, (4) original cost and money spent on improvements, and (5) 'the present as compared with the original cost.' And, lest something may have been forgotten, 'We do not say that there may not be other matters to be regarded.' Of the matters mentioned, however, (1) operating expenses are irrelevant, having nothing to do with the determination of the rate base; (2) earning capacity and (3) the market value of stocks and bonds are logical absurdities, since these depend upon the rates that are being fixed; (4) original cost and present cost, while relevant and logical, are inconsistent, since the values to which they lead are far apart. What is fair value: original cost of present cost or some compromise between the two? The Court does not say. Both must be considered, and each must be given 'such weight as may be just and right.' Depreciation was added in 1909 in Knoxville v. Knoxville Water Co., 212 U.S. 1. Wilcox, sup. cit., pp. 526-7.



capital costs, the cost of bond capital, and of preferred stock capital (if any) are also matters of record. A few voices can sometimes be slightly raised over the composition of the capital structure -- whether the utility has taken enough advantage of low-cost bonds as a source of capital -- but this too cannot possibly hold the regulatory stage for more than a brief span....

"What, then, remains for regulation to ponder over, for months upon months upon months on end, and at a cost to utilities, consumers and taxpayers of millions upon millions of dollars, and to arrive at conclusions which cannot be understood, and are not happily received, by anyone? Let me ask again, 'What are we arguing about?' The answer is breathtaking; we are, believe it or not, arguing about the cost of part of the capital, the owners' share, equity capital. A silly question is supposed to produce a silly answer; in this case, a simple sensible question that most of us have never bothered to ask produces the silliest answer of all time. We have built up the whole grand, extravagant, ridiculous panoply of fair value, reproduction cost, observed depreciation, prudent investment, fair return, statutory and constitutional appeals, inventories, precedents, briefs, tons of paper, manned by droves of executives, engineers, accountants, economists, miscellaneous experts and lawyers -- for what? To ascertain one part of one of the costs of providing utility service, under the simplest possible supply conditions, so that we can put a price on it! Where is our sense of perspective and balance -- our sense, if you please, of humor? How can adults have played this ghastly joke upon themselves, in deadly earnest -- without once smiling -- for three quarters of a century, and still keep playing it?...

"As a matter of history, we were trapped at an early age by the Supreme Court and we have loved it. The Court said in Smyth v. Ames that a utility, under the Constitution, is entitled to charge rates designed to produce a 'fair return' upon the 'fair value' of its property; and who would deny it? Who would take the stand in favor of an unfair return upon an unfair value? But what is a fair return, and what is a fair value? The Court offered no rationale and no prescription and the suggestions it offered only compounded the confusion. Fair value was to be found by exercising reasonable judgment after considering all possible elements and approaches. Thus was born the grand, mysterious, unfathomable hocus-pocus -- the process by which the parties (including, sometimes, the commission itself)

present elaborate estimates of reproduction cost under various assumed conditions and price levels, of investment, of depreciation (both accounting and observed), of intangibles -- all attested to by qualified engineers, accountants, financiers, and other experts, and all of the estimates on the same items differing widely in amount -- the whole then being taken under consideration (after examination, cross-examinations and the submission of briefs and statements by seasoned attorneys), finally to emerge in a finding of fair value by the commission. The finding -- a wondrous thing -- bears only one relation to the evidence or any combinations of the evidence: it is somewhere inside the outermost figures. It is 'found' by the exercise of judgment -- unguided, non-functional, inscrutable. It represents no 'theory,' it serves no purpose -- except to defy explanation and hence to be impervious to attack on appeal. No commissioner, let alone any commission, knows or can say how the figure was arrived at -- but there it is, revealed. It is stated explicitly not to be a compromise, or to reflect a formula. It is like nothing else in this world or, hopefully, in the next. It could be called sheer fakery save for the fact that the participants in the process are not, consciously, fakers. It is a magnificent (and very costly) exercise in self-delusion....

"From 1898 to 1944, the raging battle between the proponents of reproduction cost and actual investment centred in the Supreme Court. But the most that either side could hope for in any case was, not acceptance of its logic and figures, but a preponderance of weight for its figures in the nondescript 'fair value' that finally emerged. The weights shifted from time to time, reflecting changes in the general level of prices and in the composition of the Court. But the break came finally in the Hope case in 1944 when the Court, obviously exhausted by the sheer silliness of the whole weary business, announced that thereafter it would concern itself with results and not with methods -- and, wonder of wonders, that the results would be expected to bear some relation to the essential purpose of rate-making. The Court's words slashed cleanly through the 46-year growth of tangled, soggy jungle: 'Rates which enable the company to operate successfully, to maintain its financial integrity, to attract capital, and to compensate its investors for the risks assumed certainly cannot be condemned

as invalid, even though they might produce only a meager return on the so-called "fair value" rate base.' But, though valuation and, particularly, 'fair value' have been ousted as a requirement at the Constitutional level (the Supreme Court has entertained no public-utility rate level case since the Hope case), the warfare has continued and expanded in state legislatures, commissions and courts, as though the Supreme Court had never spoken. The jungle has reclaimed its own."77/

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77/ Lewis, Ben W., "Emphasis and Misemphasis in Regulatory Policy," Shepherd, William G. and Gies, Thomas G., Utility Regulation: New Directions in Theory and Policy, New York: Random House, 1966, pp. 232-6.

### State Regulation Since 1907-10.

Some current description of the telephone and telegraph system will provide a context for analysis of regulation, both state and federal. Telephone service, while available to four-fifths (80.6 percent) of U.S. households in 1965, was unevenly available. Only 66 percent of households with less than \$5,000 income had service, and of all farm homes only 68.6 percent had telephones. There were wide variations regionally, from 70.0 percent of all households in the South, to 86.1 percent in the Northeast and North Central regions. By comparison, 92 percent of all households had TV sets in 1965, and by the latest (1960) Census information 91.5 percent had radios, and 87.2 percent had indoor hot and cold running water.<sup>78/</sup> The Bell System provides 85 percent of all local telephones and 90 percent of all long-distance service. The remainder of the telephone service is provided by several thousand independent telephone companies. The Bell System includes 23 associated companies of which 21 are primarily or wholly owned by AT&T. It operates its long-distance service partly through the Long Lines Department of the AT&T holding company and partly through the associated companies. All of the Long Lines Service and part of the associated companies' service is in interstate commerce; all of the local telephone service is intrastate. The interface between the regulatory jurisdictions does not correspond, therefore, to the

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<sup>78/</sup> U.S. Department of Commerce Statistical Abstract, 1965, p. 759, 1968, p. 500.

interface between Bell System associated companies and the holding company. The telegraph industry in the latter part of the period covered consisted of a single domestic telegraph company, Western Union; down to 1943 there was a smaller competitor, Postal Telegraph. Direct delivery of telegrams is now available to customers through Western Union offices in only a small proportion of U.S. communities; its extension to the remainder of the population is by way of telephone pickup and delivery.

Our analysis of state commission regulation will be confined to regulatory experience with the telephone industry which occupied the centre of that stage, together with other dynamic public utility industries such as electric power and gas. Telegraph regulatory experience under state commissions followed in the footsteps of telephone.

Of all the state regulatory commissions only California, Wisconsin, New York, and at one time, Illinois, have done more than give superficial attention to the regulatory tasks for telephone and telegraph. With respect to service regulation, most state commissions have promulgated no minimum telephone service standards. A few, notably Wisconsin, Illinois, and New York adapted internal operating practices of the Bell operating companies (e.g. average operator handling time on local calls, grade of service to be provided on trunk plant, etc.) as their standards. The National Association of Railroad and Utility Commissions during the late 1930's established a Utility



Service Committee which was lethargic; by the time it proposed detailed service requirements for local manual switching, nationwide local dial conversion was imminent. In the early 1960's the NARUC Committee on Service Standards issued telephone service standards which were reduced versions of Bell System traffic and engineering practices. Fewer than half the states formally adopted even those weak standards. Except for California, New York and Ohio, which require periodic submission of certain traffic and usage data, the state commissions do not police the regulations. The recent (1969 and following) breakdowns in telephone service reflect the inadequacy of state commission regulation in New York, Miami and other cities.

Acting on consumer complaints, the California Public Utilities Commission has made significant inroads on the Bell monopoly of providing telephone instruments to consumers. Thus in 1965 it breached the tariff prohibitions against using non-Bell instruments by ordering the Pacific Telephone and Telegraph Company to connect the Swedish-designed Ericofon instrument at the usual installation rate.<sup>79/</sup> The FCC has never attempted to break that aspect of the Bell monopoly.

The provision of telephone service to rural and farm population was within the jurisdiction of the state commissions. In 1920, 39 percent of U.S. farms reported to the Census that they had

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<sup>79/</sup> Goulden, Joseph C., Monopoly, N.Y. Putnam, 1968, p. 161.

telephone service; in 1930, 34 percent, and in 1940, 25 percent. In the same period, the proportion of farms reporting use of electricity rose from 7 percent in 1920 to 33 percent in 1940, while the proportion with automobiles rose from 31 percent to 58 percent. What had happened was that the Bell System and independents had withdrawn from the rural market which was relatively costly to serve, in favour of concentrating on urban markets where economies of scale were readily available. The state commissions seem to have ignored this trend. The facts were publicized in 1944 by Senator Lister Hill and the Federal Communications Commission, and a bill was introduced to create a Rural Telephone Administration to provide financial and technical assistance to rural cooperatives interested in providing rural telephone service. Immediately the telephone industry launched a campaign with lavish publicity for a post-war program of farm telephone expansion.<sup>80/</sup> By 1945, before any federal action had been taken on Hill's proposal, the Census reported that the proportion of farms with telephone service had risen to 32 percent, and by 1950, it had risen to 38.3 percent. In late 1949, the Rural Electrification Act was amended to authorize REA to make loans to commercial companies and cooperatives to finance the provision and

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<sup>80/</sup> The editor of Telephony, the trade journal of the independent telephone industry characterized the situation: "The danger is to the telephone industry faced with the definite possibility of having the camels' nose of government ownership get under the tent of private enterprise at this particular point in the telephone business." October 21, 1944, p. 90.

improvement of rural telephone service.<sup>81/</sup> By the end of 1968, this program supported 867 construction projects with loans of \$1,566 million, bringing initial or improved telephone service to 2,317,000 homes or establishments with 2,540,000 telephones in service producing \$265 million in annual operating revenues.<sup>82/</sup> By 1964 the proportion of farms with telephones had risen to 69 percent.<sup>83/</sup>

Except for California and possibly one or two other state commissions, rate regulation has been limited to token observance of the Smyth v. Ames ritual: Since the Hope Natural Gas Case in 1944, the commissions have been relieved of the legal necessity to deal with cost of reproduction. So superficial is state rate regulation that except for one or two states no attempt is even made to allocate costs as between local exchange service and intra-state toll service.<sup>84/</sup> Rate making is effectively left to the discretion of the telephone companies except for California, and

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<sup>81/</sup> Technical assistance was necessary because the commercial industry had not developed equipment or material specifically designed for rural use. Hearings before the Subcommittee of the Committee on Appropriations, House of Representatives, 83rd Cong., 1st Sess. Part 3, pp. 1141-7. The amendment to the REA act was Public Law 423, 81st Cong.

<sup>82/</sup> U.S. Department of Commerce, Statistical Abstract, 1969, p. 498.

<sup>83/</sup> Ibid., p. 500.

<sup>84/</sup> Task Force Common Carrier Report, p. 225.

possibly one or two other states.<sup>85/</sup> Critical examination of operating expenses submitted during rate review is almost non-existent. A notable exception here is the California commission in recent years. In 1964 after a proceeding which conformed to the theoretical model of rate regulation and lasted two years, that commission issued an order sharply reducing Bell intrastate rates in California. In determining the rate base it disallowed excessive operating expenses, and disallowed from working capital the customer pre-payments of monthly bills and funds Bell collected from customers on account of Federal taxes.<sup>86/</sup> The State Supreme Court affirmed the order.

The state commissions have succeeded in preserving the ability of regulated companies to attract new capital. In preventing excessive earnings they have had only very limited success.<sup>87/</sup> Specifically in regard to telephone

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<sup>85/</sup> Recent literature on state commission regulation is almost non-existent; behavioural studies of the commissions seem not to have interested United States social scientists.

<sup>86/</sup> Goulden, op. cit., pp. 318-19, 332-3.

<sup>87/</sup> "Among the possible purposes of rate level control, regulation has shown little interest in the expansion of output and use, in the promotion of efficiency, or in the stabilization of economic activity. Its sole function has been that of striking a balance between the interests of consumers and investors, preventing the extortion of monopoly profits while preserving the ability of regulated companies to attract capital. Of these objectives, it is clear that the latter has been served. Where monopoly has persisted, as in the case of telephone, gas and electric services, regulated companies have encountered no difficulty in selling their securities. But in preventing excessive earnings, regulation has had but limited success. In general, the rate of return obtained by regulated monopolies has been well above that required to pay interest on bonds and to maintain a market for preferred and common stocks....Judged by the standards of the competitive market, regulation has fallen short." Wilcox, op. cit., p. 546.



operations, the state commissions permitted the operating subsidiaries of AT&T to include in operating expenses depreciation charges known to be in excess of actual requirements and at the same time allowed them to deduct only a small part of such depreciation in arriving at the rate base valuation of their properties.<sup>88/</sup> The state commissions (and the federal as well) have permitted purchases by the telephone operating subsidiaries of AT&T from Western Electric to be counted as operating expenses or capital costs in the absence of regulation of Western Electric's prices. In light of the fact that most Bell system procurement takes place via Western Electric, its wholly owned and totally unregulated subsidiary, the operating expenses and rate base have been inflated to the extent that such purchases reflect excessive profits. During the years 1882-1930, the Western Electric rate of earnings on average common stock equity (after appropriation for reserves) was 11.5 percent; but on paid in capital of common stockholders, it was 34.7 percent.<sup>89/</sup> The difference, of course, represented reinvestment of net income. Similar padding took place in the cost of capital charged to the operating companies, all of which was provided to them by AT&T, the holding company.<sup>90/</sup> Similarly excessive charges were made to the operating companies

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<sup>88/</sup> Telephone investigation report, chapter 11.

<sup>89/</sup> Daniellian, op. cit., p. 369.

<sup>90/</sup> Telephone investigation report, chapter 15.



through patent and research activities of the holding company.<sup>91/</sup>

This analysis of state commission performance is supported by Clair Wilcox:

"The state commissions have done little to control the quality of utility services, in general leaving initiative to the companies and acting only on complaint. Most of them have manifested little interest in the structure of rates, accepting cost analyses advanced to rationalize discrimination, or entrusting the formulation of particular charges to the discretion of managements. All of them have been concerned with the level of rates. But few have sought to control operating expenses, the largest element in the rate level, by passing on them in advance. All have prescribed accounting systems, essential to rate control, but few have attempted to enforce them by audits in the field. Few have undertaken to develop criteria of equity or efficiency to govern earnings. And none has sought to maximize consumption by reducing rates to the lowest level that would yield a fair return. Instead, attention has been centered, in the past, on determining and preserving the value of utility properties. Some commissions, in making valuations, have accepted reproduction costs. Others, while giving such costs little weight, have made obeisance to the courts by going through the mumbo jumbo of the valuation ritual. Energy has been diverted from the purpose for which the laws were passed and the commissions formed.

"Formal action is through a rate case. Some commissions initiate such cases. Others are passive, waiting for cases to be brought. In these proceedings the contest between the company and the consumer is not an equal one. The company is represented by able lawyers, well paid, fortified with facts, and supported by a staff of expert witnesses. In some states, the commission assists the consumer in preparing his case. In others, it does not. In both, his lawyers are poorly paid and inadequately re-enforced. And if the consumer wins, the company can appeal -- and appeal -- and appeal. In the past protracted litigation has been the rule. One telephone case, begun in 1921, was not decided until 1934 (Lindheimer v. Illinois Bell Telephone Co. 292 U.S.150).

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<sup>91/</sup> Ibid., chapters 6-8.

In such a situation, the commissions despaired of making progress through formal procedures and sought to salvage what they could be entering into negotiations with the companies.

"Negotiation is faster and cheaper than litigation. And it may lead to cuts in rates. But there is no assurance that it will always protect the public interest. The negotiators meet behind closed doors; no record of their proceedings is released. The outcome will depend upon the zeal of the contending parties and on their skill in bargaining. The commission has certain advantages: It can threaten formal action, appeal to public opinion, or deny requests for extensions or abandonments or for the issuance of new securities. But the companies have the support of greater knowledge, financial resources, and staying power. They are therefore unlikely to concede as much as the law would have required. The rates agreed to may still be well in excess of costs; the profits they yield may be exorbitant. As the Power Committee of the Twentieth Century Fund remarked, 'there is something fundamentally wrong with a system in which matters of such public moment are handled by public bodies in informal, and nearly always secret, conferences with interested executives.'

"Most of the state commissions confine themselves to keeping up with the daily load of work, as Bauer put it, 'in an easy-going, nonalert way.' Few of them attempt to formulate their policies or to plan their programs in advance. Few of them undertake significant research. The commissions, says Troxel, 'seem to be apathetic and do not press for funds, statutory powers and other means of improvement.' The typical commissioner 'appears more satisfied with things as they are than with good regulatory effects, more interested in his politics than his knowledge and expertness. In general, the states are sending nice political-minded boys to do a job that calls for wise and determined men.'"<sup>92/</sup>

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<sup>92/</sup> Wilcox, op. cit., pp. 574-5.

In light of the obvious inadequacies of the state commissions (in terms of quality and compensation of commission members and quantity and quality of their staffs), a recent litmus paper test was applied to them when the Senate Sub-committee on Intergovernmental Regulations held hearings on a bill to establish a competent Consumers Counsel which would offer its services to federal and state regulatory commissions to present the point of view of consumers in commission hearings.<sup>93/</sup> While the measure was supported by the Federal Communications Commission and the Federal Power Commission, it drew stern opposition from the national association of utility commissions, the AT&T and the U.S. Independent Telephone Association. The argument of the NARUC representing the state commissions was that because the quality and price of utility services had improved during the period of commission regulation, this was proof of the efficiency of their regulation.<sup>94/</sup>

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<sup>93/</sup> See S.607, the Intergovernmental Utility Consumers' Counsel Act of 1969, and 21 days of hearings thereon before the Subcommittee on Intergovernmental Relations of the Committee on Government Operations, United States Senate, 91st Cong., 1st Sess.

<sup>94/</sup> Their representative, after reciting evidence of telephone rate reductions since 1920, concluded "We believe that these figures succinctly indicate an impressive regulatory record by any standard. It shows beyond doubt the effectiveness of Federal and State regulation." Hearings on S.607, sup. cit., Part 2, p. 218. Had the country and industry been in a period of secular decline, it may be doubted that the regulatory commissions would accept evidence thereof as proof of their failure to regulate the industry.

Federal Telephone Regulation, 1910 - on.

Turning now to the operational experience with federal regulation of the approximately one-fourth of revenues, plant and service over which the federal agencies have jurisdiction, the period 1910 to 1934 may be disposed of summarily by quoting the President's Task Force on Communications Staff Report on common carriers: "ICC regulation was confined to the requirement of regular reports and a uniform system of accounts."<sup>95/</sup>

When the Federal Communications Commission was created in 1934, it was given a number of regulatory tasks: (1) It replaced the Federal Radio Commission with responsibility to license and regulate broadcasting. (2) It took on regulatory responsibility for common carriers' operations "interstate" and in foreign commerce (i.e. international carriers by cable or radio). (3) It was given the responsibility to regulate marine, aviation, and other radio services for safety, or operational efficiency. (4) It acquired from the Department of Commerce responsibility for licensing radio operators, including amateurs. (5) It was given responsibility for allocating the radio spectrum for non-governmental uses, and in connection therewith responsibilities for treaty negotiation and preparation for ITU meetings of all kinds. (6) It was given responsibility for surveillance of technical aspects of radio operations (i.e. a nationwide monitoring service to keep radio

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<sup>95/</sup> Task Force staff report on common carriers, p. 33.



operations consistent with rules and regulations). As we will observe, this broad span of duties set up a situation in which the Commission, responding to pressures both positive (inviting regulatory action as broadcasting and safety and special services typically do) and negative (resisting regulation as the common carriers typically did), devoted its resources primarily to the former work, neglecting the latter.

The provisions of the Communications Act of 1934 conferred on the FCC the familiar assortment of legal tools for the regulation of common carriers, except that no authority was conferred to regulate security issues, corporate capital structure, or investment in physical facilities (unless in the form of "lines").<sup>96/</sup> With the exception

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<sup>96/</sup> Carriers regulated by the Act are under a duty to furnish service upon reasonable request, and their charges, practices, classifications, and regulations must be reasonable and non-discriminatory (sec. 201, 202(a)). Tariff schedules must be filed with the Commission and published in the manner prescribed by the Commission (sec. 203). Departures from the filed schedules are prohibited. The Commission has the authority to fix just and reasonable charges, and to determine the reasonableness of practices, classifications, and regulations (sec. 205(a)). It also has power to suspend the effective date of proposed changes in tariff schedules for a limited period of time (sec. 204). The Commission has valuation powers to find the original cost, cost of reproduction new, less depreciation, etc. of carriers' properties, and to prescribe classifications of depreciable property and rates of depreciation to be applied to them (secs. 213, 220(b)). It has the power to determine what portion of wire-telephone property should be regarded as used in interstate and foreign toll service (sec. 221(c)). It may prescribe the forms of accounts, records, etc. to be kept by the carriers and periodic reports based on them (sec. 220). It may compel the establishment of physical connections with other carriers, as well as the construction of facilities needed to provide adequate service. (Sec. 201(a), 214(d)). Carriers may not undertake expansion of "lines" or discontinuance or curtailment of service unless the Commission has so authorized (Sec. 214(a)). Commission approval is required for the merger of telephone or telegraph carriers (Sec. 221(a), 222). Communications Act of 1934.



of carefully defined permissible mergers in telephone and telegraph, Congress authorized the Commission to enforce compliance by common carriers with relevant sections of the Clayton Antitrust Act<sup>97/</sup>.

In light of the weak position of the state regulatory commissions, it is notable that in the Communications Act, Congress specifically encouraged the FCC to cooperate with state commissions through consultation regarding accounting and engineering matters, and through holding proceedings jointly with them. It is also relevant to observe that the definition of interstate commerce used in defining FCC regulatory jurisdiction was quite narrow: Local exchange service which crosses state lines (e.g. between Virginia, District of Columbia, and Maryland in Washington) is beyond FCC jurisdiction if it is subject to state or local regulation.<sup>98/</sup>

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<sup>97/</sup> Sections 2, 3, 7 and 8 of the Clayton Act (Section 602(d)).

<sup>98/</sup> See Sec. 410 and 220(i) regarding state commissions. Section 221(c) defines the jurisdiction narrowly.

The definition of jurisdiction over radio transmission was virtually total<sup>99/</sup>

In light of recent awareness of the implications of R. & D. in telecommunications technology, it is interesting to note that the FCC was equipped with legal power to have played a creative role beginning with the 1930's. The Commission was told by Congress it "shall study new uses for radio, provide for experimental uses of frequencies, and generally encourage the larger and more effective use of radio in the public interest"<sup>100/</sup> In the section concerned

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<sup>99/</sup> It is the purpose of this Act, among other things, to maintain the control of the United States over all the channels of interstate and foreign radio transmission; and to provide for the use of such channels, but not the ownership thereof, by persons for limited periods of time, under licenses granted by Federal authority, and no such license shall be construed to create any right, beyond the terms, conditions and periods of the license. No person shall use or operate any apparatus for the transmission of energy or communications or signals by radio (a) from one place in any Territory or possession of the United States or in the District of Columbia to another place in the same Territory, possession, or district; or (b) from any State, Territory, or possession of the United States, or from the District of Columbia to any other State, Territory or possession of the United States; or (c) from any place in any State, Territory, or possession of the United States, or in the District of Columbia, to any place in any foreign country or to any vessel; or (d) within any State when the effects of such use extend beyond the borders of said State, or when interference is caused by such use or operation with the transmission of such energy, communications, or signals from within said State to any place beyond its borders, or from any place beyond its borders to any place within said State, or with the transmission or reception of such energy, communications or signals from and/or to places beyond the borders of said State; or (e) upon any vessel or aircraft of the United States; or (f) upon any other mobile stations within the jurisdiction of the United States, except under and in accordance with this Act and with a license in that behalf granted under the provisions of this Act. Sec. 301.

<sup>100/</sup> Sec. 303(g).

directly with common carriers, a similar injunction was given it.<sup>101/</sup>  
 The Commission was given power to undertake inquiries on its own initiative on any question arising under any provision of the Act<sup>102/</sup>, and finally the President was given wide powers to seize, operate or control communications facilities by wire or radio in the event of war.<sup>103/</sup>

In March, 1935, shortly after its creation, the FCC was directed by Congress to investigate all aspects of the telephone industry.<sup>104/</sup> In the next four years, that investigation produced the only thorough-going analysis ever made of the U.S. telephone industry. The conclusions and recommendations of the investigating

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<sup>101/</sup> "Sec. 218. The Commission may inquire into the management of the business of all carriers subject to this Act, and shall keep itself informed as to the manner and method in which the same is conducted and as to technical developments and improvements in wire and radio communication and radio transmission of energy to the end that the benefits of new inventions and developments may be made available to the people of the United States. The Commission may obtain from such carriers and from persons directly or indirectly controlling or controlled by, or under direct or indirect common control with, such carriers such full and complete information necessary to enable the Commission to perform the duties and carry out the objects for which it was created."

<sup>102/</sup> Sec. 403.

<sup>103/</sup> Sec. 606. This section was extensively used during World War II, first through the Defense Communications Board and later by the Board of War Communications, most staff work for which was done by the FCC.

<sup>104/</sup> Public Resolution 8, 74th Cong. 49 Stat. 43. "The purpose of the resolution was to secure information on the telephone industry, particularly the American Telephone and Telegraph Co., 'in aid of legislation by the Congress and for the use of governmental agencies, including State regulatory commissions, for the information of the general public, as an aid in providing more effective rate regulation, and for other purposes in the public interest.'" Special Telephone Investigation Report, p. xvii.

commissioner and staff throw light on the regulatory experience before and after 1939:

(1) All aspects of Bell System operations and policy are determined by the executives in the "General Department" of AT&T.

This arrangement

"...provides a perfect design for the absolute control of the apparent costs of rendering telephone service, and, therefore, of telephone rates predicated upon those costs, and of earnings derived therefrom by the parent company....Unless effective means can be developed to supervise and control the policies promulgated by the executive officers of the American Co., effective regulation of the Bell System as a public utility is impossible." 105/

The rate base and operating expenses of the Bell System operating companies are controlled from the centre in such a manner as to defeat state regulation: viz,

(a) Western Electric's operations and accounting are beyond the jurisdiction of state commissions and the FCC:

"All efforts to obtain manufacturing costs of Western on materials constituting the plant of a telephone company have been thwarted by the American Co., notwithstanding the decision of the United States Supreme Court in the case of Smith vs. Illinois Bell Telephone Co., in which the Court held that Western's profit on its sales to the Illinois Bell Telephone Co. must be shown to be reasonable....Determination of Western's costs of manufacturing telephone apparatus and equipment has not been possible because, in the absence of a suitable cost accounting system, the expenditures necessary to obtain such costs were far in excess of the resources of any State commission. It is significant of the American Co.'s policy that the Western

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105/ Walker report, pp. 680-681.



Electric is perhaps the only large manufacturer which keeps no record of true costs of any of its products, keeps no direct record of the cost of sales, and maintains such a voluminous, intricate and unreliable mass of records and estimates as a substitute for a cost accounting system that the determination of true and actual costs therefrom is an impossibility. In the absence of knowledge of Western's manufacturing costs State commission regulation breaks down in the face of costs built up from prices fixed arbitrarily by the Western Electric Co. under American Co. direction.<sup>106/</sup>

(b) Correct information covering the relative operating economies of different types of equipment is unavailable to state commissions because of the central control of technical development and technical information through the Bell Laboratories and effective regulation by the states is thus impeded.

"This authority can be and has been exercised to prevent or speed up the supersession of existing plant by newly developed types and to determine the quantity and nature of new construction. The cost of telephone service depends, to a large extent, upon the type of equipment used. For maximum efficiency, each telephone exchange must have equipment suited to its needs and service requirements. When, as in the Bell System, large investments in plant lead to a higher dollar amount of profits for the parent company, both through increasing the sales of the manufacturer and through increasing the rate base of the operating companies, the kind of plant used is a proper subject of scrutiny in

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<sup>106/</sup> Ibid., p. 682. The Smith case citation is 282 U.S. 133.



fixing reasonable telephone rates."<sup>107/</sup>

(c) The costs of purported services rendered by the American Co. to the Associated Companies under the license contract are unknown and unknowable to the state and federal regulatory commissions. Even after Smith vs. Illinois Bell Telephone the costs of services for which all associated company revenues were taxed 1-1/2 percent for the holding company were shown by AT&T as having "...included expenses of practically the entire American Co. organization, except the long lines department....In the absence of adequate records,

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<sup>107/</sup> Ibid., p. 683. An example is given. Referring to effective regulatory control by the FCC over the central Bell System officers, the Proposed Report says, "Had such a policy been effective at the time panel dial central office equipment was standardized in the Bell System, it is probable that large expenditures of investment capital which failed to justify expectations in operating savings would have been minimized or avoided and the burden on subscribers lessened. The evidence in the Investigation shows that the panel dial program was inadequately tested prior to its standardization and wide-scale introduction in large cities in which telephone service was operated by the Bell System. Despite the fact that later studies indicated the uneconomical nature of the panel dial program, it was vigorously pressed by the central organization of the Bell System, with the result that subscribers were forced to pay rates on equipment that was less efficient, less economical in operation, and more costly than other available types of equipment capable of giving as good or better quality of service. In addition, the investing public represented by American Telephone and Telegraph Co. stockholders purchased an interest in the panel dial type of plant which would be liquidated at additional cost to the investor were the company not permitted to pass on such added costs to the telephone subscriber. Had Federal regulatory authority with power to review, approve, or disapprove Bell system policies existed at the time the panel dial program was introduced on a System-wide basis, such a program probably would not have been adopted....It would have withheld its approval after original introduction of this equipment in actual operation in a few cities had indicated that the original cost estimates made by the American Co. and Western were entirely erroneous and that heavy losses were inevitable." Ibid., pp. 688-9.

State commissions have been unable to make separations between the cost of the American Co.'s holding company functions and the cost of alleged services performed for the Associated Companies."108/

(d) The holding company improperly used depreciation reserves (obtained through operating expenses charged customers of the Associated Companies) as a major source of funds for new investment while claiming that depreciation a fraction as large was all that should be deducted from cost for rate base purposes.109/

(2) The jurisdiction of the FCC under the Communications Act of 1934 was not sufficiently comprehensive to regulate effectively the quality and cost of telephone service controlled by AT&T's

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108/ "Furthermore, it has not been possible to make a sound division between services to different Associated Companies and to long lines, or between services for the benefit of the exchange and the toll business of the Associated Companies. In the absence of accurate cost records upon which to base reasonable apportionment of joint activities, no measure of the reasonableness of the license contract payments for the purposes of rate regulation has been or is available." Ibid., p. 683.

109/ "Since 1909, the American Co. has required its licensees to set up depreciation reserves accrued from straight-line annual depreciation charges based upon the cost of the plant and its estimated average life and salvage. In the rapidly growing Bell operating companies, with their large additions and small retirements, reserves accumulated so rapidly that by the end of 1936, they amounted to \$1,145,000,000 or approximately 28 percent of the total Bell System investment in physical property. The investment in telephone plant depreciation reserves, accrued from depreciation charges against operating expenses in excess of amounts required to maintain intact the original investment, achieved the same results as charging plant construction to operating expenses. The extent to which reinvested reserves have been offset by depreciation deductions from value in arriving at rate base has been comparatively small. Bell System companies, in general, have claimed in rate cases a deduction for accrued depreciation of between 5 and 10 percent in arriving at value, despite the fact that the depreciation reserve carried on the Company's books was several times as great." Ibid., p. 684.

central management:

"The field of effective state action is dependent largely upon the aid which may be rendered by the Federal Communications Commission in those matters which, due to the Nation-wide nature of the Bell System, cannot be reached by local authority. The field of effective Federal action lies not only in the regulation, properly authorized, of purely interstate telephone matters but also the use of its wider jurisdiction, properly authorized, to ascertain those facts essential to proper State regulation. The practical situation is that the Federal Commission alone can be clothed with the required scope of authority to investigate the reasonableness of the costs of telephone apparatus and equipment, of the costs of research and development, of the costs alleged to be incident to the license service contract, and of the American Co.'s cost estimates upon which Associated Company plant construction policies and operating methods are based. Such information should be compiled continuously and made available for the use of State commissions."<sup>110/</sup>

The investigation report proposed that a before-the-fact review of AT&T's policy-making should take the place of post-facto piece-meal approaches<sup>111/</sup>

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<sup>110/</sup> Ibid., p. 686.

<sup>111/</sup> "If regulation is to be successful, it is axiomatic that jurisdiction be co-extensive with the subject to be regulated. The scope of existing regulatory authority over the Bell System is not coextensive with the scope and concentration of American Co. control over Bell System activities....The facts developed by this investigation demonstrate that such a policy cannot be achieved merely through post facto policing of the results of policies and practices in the Bell System promulgated by a single, central executive staff in which is concentrated complete control of the Nation-wide communications system. They indicate that such a policy may be achieved effectively only by establishing the power of regulatory authority to review, approve or disapprove, at their source, those central policies which affect the Nation-wide communications system represented by the Bell group. This does not imply an unwarranted invasion of the field of management by regulatory authority. It means merely that the probable effect of policies proposed by the central management group of the Bell System shall be weighed before their general introduction in the System, in order to determine their ultimate probable effect upon the quality and cost of rendering a Nation-wide telephone service." Ibid., p. 687.



The proposed report therefore made two types of recommendations. First, policy recommendations capable of determination under existing authority were made:

(a) A series of guiding principles to cope with the depreciation problem was proposed.<sup>112/</sup>

(b) The Bell System pension plan should be revised. This plan, built of charges to operating expenses, provided the American Co. with capital funds borrowed by the latter at a profit for reinvestment in the company, and was "an important factor in carrying out

<sup>112/</sup> "(1) An unseverable connection exists between the depreciation which has been currently accruing in a telephone property throughout its life and the total accrued depreciation which is deductible from cost in determining the rate base.

(2) Annual depreciation charges included in operating expenses should be equal, as nearly as may be, to the depreciation currently accruing in the property. The accumulation of such annual depreciation charges in the depreciation reserve is the fairest measure of depreciation deductible for valuation purposes.

(3) The total of the annual depreciation charges, accumulated against a group of property units throughout their life must be adequate, and not more than adequate, to meet the net loss (original cost less salvage) when and as the units of the group are retired.

(4) Adherence to the straight-line method of depreciation accounting should not be so construed as to permit either overaccrual or underaccrual of the depreciation reserves against depreciating groups of property units. Depreciation of reserves should be compared periodically with the cost of surviving units in each group, and annual depreciation charges should be so adjusted that the original cost less salvage will have been amortized at the time of ultimate retirement of the group from service.

(5) The accumulated depreciation reserves, as well as future additions thereto, should be held as trust funds to be administered by the company for the benefit of subscribers present and future.

(6) The earnings on the reserve should accrue to the benefit of the subscribers.

(7) Not less than the full depreciation reserve should be deducted from cost in determining the rate base under the straight-line method of accruing depreciation." Ibid., p. 711.

the purposes of the American Telephone and Telegraph Co.'s general department for complete and unquestioned control of the entire Bell System personnel."113/

(c) The vast public relations program of the Bell System should be curbed by shifting the cost of institutional advertising "to the stockholders who are directly benefited thereby rather than [being borne] by telephone subscribers," shifting expenses of employee dues to civic, commercial, professional and social organizations and for donations to charity from operating expenses to stockholders, prohibiting free service, and requiring that lobbyists reporting to the central authority of AT&T be required to register.114/

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113/ "Fear of losing the pension is unquestionably a club over the heads of Bell System employees from the presidents of the Associated Companies down to the lowest paid worker which insures their unquestioning acquiescence in plans and policies promulgated by the small group of American Telephone and Telegraph Co. executives. This form of control of employees is against the best interests, both of the workers and of the public, since it tends to stamp out initiative, to prevent the workers from asserting their rights, and to remove any check on the misuse of the practically unlimited powers of the American Co. oligarchy, which might arise from the presidents and other executives of the Associated Operating Companies." Ibid., p. 695. The revisions proposed were "(1) Large executive pensions, payable under the present plan, should be reduced drastically. (2) The Company's asserted right to revoke or suspend the pension benefits, earned under the terms of the plan, should be abrogated. (3) Bell System Companies should be required to commit themselves to a definite plan under which the difference between their matured obligations and the amount of the pension fund would be devoted to the payment of service pensions in the event the plan is canceled. (4) The funding of the unfunded actuarial liability should not be permitted as a charge to operating expenses." Ibid., p. 711.

114/ Ibid., pp. 711-2.



The second type of recommendations by the Investigation group proposed that Congress give the FCC authority:

"(a) To review, approve, or disapprove all Bell System policies and practices promulgated by the central management group of the American Co.

(b) To regulate the costs and prices of telephone apparatus and equipment.

(c) To review, approve, or disapprove all intercompany contracts.

(d) To regulate Bell System financing...."<sup>115</sup>

(e) To limit the scope of Bell System activities to the communications field, including the power to prevent Bell from expanding into non-common carrier industries, and the power to require Bell or other entities to license under their patents."<sup>116</sup>/

There were a number of other minor recommendations for new legislation.

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<sup>115</sup>/ Specifically, "(a) The power to require competitive bidding in the issuances of evidences of indebtedness of the American Co. and other interstate telephone companies. (b) The power to determine the conditions under which future issues of capital stock should be authorized with power to require sale of stock at or near market price or at a price competitively determined, if public interest would be served thereby. (c) The power to regulate the conditions of loans and the cost of funds advanced by the American Co. to the Associated Companies. (d) The power to regulate the acquisition of securities in subsidiary telephone companies whether for purposes of financing or for extension of control." Ibid., p. 712.

<sup>116</sup>/ Bell had ventured into motion picture production and a number of other industries unrelated to telephony as a result of its patent position established through research conducted at Bell Laboratories at the expense of telephone rate payers.

The report as sent to Congress by the seven-member Commission was substantially milder in tone than the proposed report. Of the five major recommendations listed above, it preserved only the second and fourth intact, and the fifth in part<sup>117/</sup> Between the publication of the proposed report and the submission of the final report, the Commission had received briefs and comments from the industry, especially the AT&T which focussed their best defensive efforts against the proposed report.

For the utter legislative silence which prevailed on the recommendations thereafter, it may be surmised the influence of the

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<sup>117/</sup> "First, specifically to authorize this Commission to prescribe basic cost-accounting methods to be followed by manufacturing companies under contract with operating telephone companies for the general supplying of materials or equipment, and by manufacturing companies subsidiary to or affiliated with operating telephone companies through corporate structure.

"Second, to require approval by this Commission for, and as a condition precedent to, the issuance or refunding of any securities of corporations which offer telephone service subject to this Commission's jurisdiction....

"Eighth, in the event of the refusal of any common-carrier utility engaged in interstate communications to license others upon reasonable terms under any patents obtained in connection with communication service to the general public as a common-carrier utility, the Commission should be empowered, upon the application of parties so refused, to order the issuance of such license; provided that the granting thereof will not be detrimental to the communication service rendered by the utility holding such patents and not detrimental to technical progress." Special Telephone Investigation Report, p. 601.

Bell System was to a considerable degree responsible.<sup>118/</sup> And a relentless pressure against adequate budgets for FCC common carrier regulation began which continued permanently.<sup>119/</sup>

At this point one may ask why the FCC in 1939 in framing its conclusions to the special telephone investigation failed to give recognition to the powerful tools at its disposal in the antitrust laws (which as we have noted, Congress in the Communications Act invited it to apply to common carriers) through which it might have attacked many of the problems identified in the investigation (such as forcing AT&T to divest itself of its manufacturing and supply subsidiary, Western Electric)? Probably the Proposed Report suggests the answer. In the concluding section it identified three means by which a proper balance between a reasonable return on capital invested in the telephone industry and the reasonable price to be paid for telephone service could be achieved: Effective competition, government ownership or effective regulation. The first was deemed

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<sup>118/</sup> The special telephone investigation report had said: "The files of the American Co. disclose that the objective of the legislative activities of the Bell System is to foster and retain every possible protection for its private ownership, service, rates, financing, labor relations, and every other element of its business which it regards as desirable and conducive to its own well-being. Through the persistent and coordinated efforts of its Nation-wide organization and friendly contacts, under the guidance and suggestions of the parent company, it has sought to prevent the introduction and passage of legislation adversely affecting its interests or activities. It has secured the modification and amendment of legislation in such a way as to defeat or to emasculate the main purpose, or has been able to exempt the Bell System or the telephone industry from the provisions of such bills." Telephone investigation report, pp. 487-8.

<sup>119/</sup> The Hoover Commission task force staff report in 1948 noted "After the telephone investigation was concluded, the Commission found it increasingly difficult to obtain the funds required to do an adequate job of common carrier regulation." Golub, William W., Federal Communications Commission, Committee on Independent Regulatory Commission of the Hoover Committee. September 15, 1948, p. II-31.

impossible, the second inexpedient and the report opted for the third in these words, "Inasmuch as the possibilities of protecting both the public and utility interests by regulation have not yet been tested in practice, it appears desirable to continue the attempt to accomplish the necessary objectives under regulation."<sup>120/</sup> The FCC had accepted the "one system, universal, interdependent" definition of the telephone monopoly which that monopoly had educated the public to accept.

From 1939 to the 1960's, the regulation of the telephone industry by the FCC may be summarized as a matter of too little in the way of resources being devoted to a regulatory task which in fact was made impossible by the failure of Congress to act on the recommendations of the original Walker report for legislative authorization to deal with the problems of Western Electric and the policy-making oligarchy in the AT&T holding company.

The operational experience of the FCC with telephone regulation in the period 1934 to the present may be approached first by

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<sup>120/</sup> The grounds for rejecting competition were "The Bell System now occupies virtually all of the desirable telephone market in both the operating and manufacturing fields. Reestablishment of a strong, independent telephone system to compete with the Bell System is impossible as a practical matter. In addition, the highly complicated and integrated social, economic and political structure requires, as a necessary adjunct thereto, a single national, unified wire communications system." (Proposed report, p. 686). It then went unquestioned that such a system must be under monopoly ownership. The grounds for dodging the issue of government ownership were: "The question of Government ownership of the communications system has not been studied in this investigation because it seemed advisable first to examine the possibility of effective regulation as a substitute for competition." Ibid., p. 687.



examining the relative attention which telephone regulation received among the many duties of the Commission. The Hoover Task Force staff report in 1948 characterized the FCC as following a policy of giving

"...priority to those projects which were of interest to the articulate elements in the communications industry. Unless there was a clamor for action, the Commission apparently assumed that it could defer the discharge of its responsibilities. Since the resources of the Commission were limited, it could at most perform only the functions which were urgent in this sense."<sup>121/</sup>

Until at least the time in the 1960's when the burgeoning electronic technology created industry problems affecting common carriers, the tendency was for the common carriers to prefer to be let alone. The Bureau of the Budget by its pressure to eliminate non-urgent work reinforced the common carriers' influence on the Commission workload.<sup>122/</sup> While these pressures pushed against effective common carrier regulation, the high interest which broadcasting, especially television evokes from industry and Congress, pulled Commission attention in that direction, as also have CATV and the Safety and Special Services to a lesser degree. Estimates of the proportion of their time which the members of the Commission devote to broadcast matters in this period range from two-thirds to three-quarters.<sup>123/</sup>

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<sup>121/</sup> Golub, op. cit., p. II-53.

<sup>122/</sup> Golub, op. cit., p. III-10.

<sup>123/</sup> Commissioner Craven told the House Independent Offices Appropriation Sub-committee in 1961, "...I think we spend about two-thirds of our time on broadcasting and one-third on other matters." Hearings, p. 649. Golub estimated between 50 and 75 percent. Op. cit., p. II-30.



Consequently, as Golub put it,

"In the telephone field, the Commission just skims the surface. It tries to keep abreast of new developments, a not completely successful effort, but has been unable to devote any time to constructive regulation. The smooth functioning of the Bell System, its continued development of new techniques and improvement of services, its reasonable cooperation in reducing charges on toll services, all add to the regulatory inertia.

"Virtually all the resources of the Commission devoted to this work, and they are mainly at the staff level, are concerned with trying to find the problems and not with their solutions. The Commission is aware of the probable existence of rate and service problems, but activities stop with the awareness. Even pressures from State commissions for a further FCC inquiry into Western Electric charges, for example, have not succeeded in moving the Commission to act....

"The effective regulation of common carriers is not, of course, wholly a matter of finding more time and interest at the Commission level. It requires, as well, the coordinated efforts of a large staff of engineers, accountants, rate experts, economists and attorneys. The present common carrier staff of the Commission clearly is inadequate for a comprehensive regulatory program.

"The Commission, however, has made no real attempt either to marshall its staff for a less comprehensive regulatory effort or to obtain the additional funds needed for the larger job. Its requests for appropriations have reflected its relative lack of interest in common carrier problems."<sup>124/</sup>

A similar judgment was rendered after a study of the Common Carrier Bureau of the Commission by the consulting firm of Booz, Allen and Hamilton in 1962.<sup>125/</sup> The allocation of Commission staff and money

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<sup>124/</sup> Golub, op. cit., P. II-33-4.

<sup>125/</sup> Organization and Management Survey of the Federal Communications Commission for the Bureau of the Budget, March, 1962 in Hearings, before the Sub-committee on Antitrust and Monopoly of the Committee of the Judiciary, United States Senate, 87th Cong. 2nd Sess., Pursuant to S. Res. 258, Part 2, pp. 653-683.

to its several areas of responsibility is shown in table 1.

Common carrier staff in the FCC declined from 174 in 1947 to 125 in 1958; by 1969 it had risen to 161. As a proportion of the total, common carrier staff was only 13 percent in 1947; it fell to 11 percent in 1958 and 1969.

But what has the FCC actually done in the way of regulating the telephone industry? We recall the model of what the "theory" of public utility regulation of a monopolistic corporation is expected to be in section (b) above. With respect to applications from telephone companies for permission to extend "lines," to authorize mergers of telephone companies, etc., the Commission has handled them routinely, and without generating any policy issues worthy of note. With respect to tariff filings on private line and TV program transmission down to the controversial "Above 890"-induced new services (WATS, WADS, TELPAK), the FCC protected the Bell monopoly. Thus, in the late 1940's Western Union tried to enter the private line market for TV program transmission; the Commission in a split decision refused to order interconnection between them and the Bell System, thus protecting the Bell monopoly in that lucrative market.<sup>126/</sup> As noted in the introduction, the interconnection barrier which Bell has employed to protect its universal system has been breached in recent years in the MCI case, as well as in the Carterfone

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<sup>126/</sup> FCC Docket 9539, 1952.

Table 1.

Federal Communications Commission: Average Employment and Total Budget  
1947, 1958 and 1969 Fiscal Years

	Average Employment					
	1947		1958		1969	
	Number	Percent	Number	Percent	Number	Percent
Common Carrier	174.2	12.6	125.0	11.3	160.9	11.0
Broadcasting	200.3	14.4	231.7	20.9	302.3	20.6
Frequency Allocation and Communications Technology	56.6	4.1	72.0	6.5	102.0	7.0
Safety and Special Services	149.2	10.8	129.9	11.7	183.7	12.5
Surveillance	498.5	35.9	341.9	30.9	412.1	28.1
CATV	--	--	--	--	40.7	2.8
Other	308.4	22.2	205.8	18.7	263.4	18.0
	<hr/> 1,387.2	<hr/> 100.0	<hr/> 1,106.3	<hr/> 100.0	<hr/> 1,465.1	<hr/> 100.0

Table 1 -- continued

	Expenditures (\$1,000)					
	1947			1958		
	Number	Percent	Number	Percent	Number	Percent
Common Carrier	774.0	14.3	961.0	11.6	2,407.0	11.6
Broadcasting	800.0	14.8	1,638.0	19.7	4,321.0	20.9
Frequency Allocation and Communications Technology	250.0	4.6	615.0	7.4	2,007.0	9.7
Safety and Special Services	557.0	10.3	890.0	10.7	2,264.0	10.9
Surveillance	1,950.0	36.1	2,577.0	31.0	5,498.0	26.6
CATV	--	--	--	--	657.0	3.2
Other	1,069.0	19.9	1,619.0	19.6	3,534.0	17.1
	5,400.0	100.0	8,300.0	100.0	20,693.0	100.0

Source: 1947 data; Golub., William W., Staff Report on the Federal Communications Commission, (Hoover) Committee on Independent Regulatory Commissions, September 15, 1948, p. I-57.

1958 data; Hearings before the Subcommittee of the Committee on Appropriations, House of Representatives, 85th Cong., 2nd Sess., Independent Offices Appropriations for 1959, Part 2, pp. 655-6.

1969 data; Hearings before the Subcommittee of the Committee on Appropriations, House of Representatives, 91st Cong., 1st Sess., Independent Offices Appropriations for 1970, Part I, pp. 607-9.

and earlier Hushaphone decisions.

But with respect to the public switched network telephone service, what has the FCC done in the way of regulation of rates? For 31 years it failed to hold a general rate hearing to determine the reasonableness of the rates charged for that system of services. Instead it periodically negotiated privately with the Bell System whenever on the unexamined books of the latter it appeared prima facie that the net income had risen to levels which, were the procedure a formal rate hearing, there would appear to be an excessive rate of return. Such negotiated rate reductions were obtained during the years when the special telephone investigation was being conducted and were repeated frequently thereafter. Out of this process rates on interstate toll service were progressively reduced during the period 1934-1965. On one occasion, in 1953, however, the FCC even negotiated a substantial increase in long distance telephone rates. There was no reason to believe that the results of such negotiated rate reductions were as beneficial to the rate payer as would have been an adversary proceeding in a quasi-judicial setting such as the theoretical model of rate regulation was expected to provide. For it is axiomatic that the Bell System would demand its right to due process (a public hearing, appealable to the courts) before it would accept a rate order from the FCC which, in the Bell System's opinion, would reduce profits below a reasonable level. The conclusion is inescapable that the rates which the carrier would accept through



negotiation would be higher than those which a Commission and Court would determine as the result of a contested rate proceeding.<sup>127/</sup>

The FCC's lack-lustre performance on rate regulation did not go unnoticed by Congress. In 1959, the Antitrust Sub-committee (No. 5) of the House Committee on the Judiciary evaluated the effectiveness of FCC regulation of interstate telephone rates in these terms:

"In this area too, it would appear that the Commission has allowed its predilection for the A. T. & T. viewpoint to outweigh its obligations to protect the interests of the telephone using public....

"In sum, between 1955 and October 1957, the Chief of the Common Carrier Bureau no less than six times called the attention of the Commission to the fact that the Bell System, by virtue of the 1953 rate increase, was deriving a return from interstate telephone service in excess of 6 1/2%. On at least two occasions in this period the staff made the 'very definitive recommendation' that action should be taken by the Commission looking toward a possible rate reduction. Nevertheless, the Commission has not been willing up to now to institute a formal rate investigation to determine whether the system's rates are unreasonably high; it has been unwilling even to authorize the staff to negotiate on an informal basis with the Bell System in order to obtain a voluntary rate reduction.

"It is significant that the Commission has neglected in the 24 years of its existence to establish fundamental principles or standards by which to judge the reasonableness of Bell System's interstate telephone rates. In the absence of such standards, telephone subscribers have no assurance against arbitrary Commission action or against long-distance charges in excess of those required by the statutory mandate.

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<sup>127/</sup> The large round numbers, e.g. that in November 1964 the FCC negotiated a \$100 million rate reduction for interstate toll service, are rough calculations with very dubious theoretical foundations; they served well the public relations of the Bell System and the FCC.

The committee believes that it is necessary in the public interest that there be instituted promptly a comprehensive, formal rate investigation to determine on a public record a fair rate of return for interstate telephone service; the basis upon which such return should be computed; and various other questions which are involved in evaluating interstate revenue requirements for rate-making purposes.<sup>128/</sup>

As with rates, so the FCC during this period negotiated price "reductions" on commodities sold by Western Electric to the operating companies of the Bell System. Parallel ineffective gestures were made toward dealing with the complex depreciation problems identified during the special telephone investigation. Possibly the most confusing and serious problem which the FCC, by virtue of its limitations, never definitively settled was the "separations" matter. This refers to the basis of apportioning investment and expenses between operations subject to federal jurisdiction and those subject to state commission jurisdiction. The issue of proper "separations" is fundamental to the exercise of competent rate regulation by both the state commissions and the FCC, for on the results of the separations rests the appraisal of the profitability of the services in the respective jurisdictions. Yet it was not until 1969 that the FCC undertook a definitive rule-making proceeding governing separations.<sup>129/</sup>

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<sup>128/</sup> Report, January 30, 1959, of Antitrust Subcommittee (No. 5) of the House Committee on the Judiciary, pp. 78-83.

<sup>129/</sup> Procedures for approximating "separations" were worked out by a joint FCC-National Association of Utility Commissioners committee in 1947 and periodically revised; significant unresolved differences have persisted between the view of the FCC and the Bell System about the results.

Other shortcomings took place underneath the "continuing surveillance" which the FCC practiced in lieu of effective rate regulation. The reasonableness of the expenditures by the Bell System were not examined. The financing of the Bell System has been completely untouched by FCC regulation, despite the bearing which the equity-debt ratio has on the necessary cost of capital.<sup>130/</sup> The FCC did not examine the structure of toll rates (i.e. to ascertain whether differences in rates reflected cost differences). It did not separate international revenues and costs from the interstate-intrastate mix, nor did it conduct any studies of the reasonableness of international telephone rates even on terms of the unexamined accounts of the Bell System until the Communications Satellite Corporation's imminent creation forced such studies.

Finally, however, in 1965 a number of factors combined to force the FCC to hold its first general rate hearing on interstate toll telephone service. The California Public Utilities Commission had challenged the propriety of the FCC's "continuing surveillance" conferences with AT&T as a substitute for a rate hearing and had petitioned the U.S. Circuit Court of Appeals to compel the FCC to hold a bona fide rate hearing.<sup>131/</sup> The FCC's special telegraph

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<sup>130/</sup> Johnson, Leland L., Communications Satellites and Telephone Rates: Problems of Government Regulation, Santa Monica, Rand Corp., 1961. Reproduced in Hearings before the Subcommittee on Antitrust and Monopoly of the Committee of the Judiciary, United States Senate, 87th Cong., 2nd Sess., pursuant to S. Res. 258, Part 2, p. 615.

<sup>131/</sup> FCC Annual Report to Congress, 1965, p. 47.

investigation had just been completed and among its findings was evidence that the switched telephone network services were subsidizing the private line rates with which the Bell System was trying to engross the markets opened to competition following the Above 890 decision. And finally, even on its own showing, Bell's rate of return earnings during 1965 were exceeding 8 percent. On October 27, 1965 the FCC instituted its first formal review of charges for all interstate and foreign telephone service.

The first phase (1A) of the AT&T rate case (docket 16258) dealt with the rate of return and separations issues. After a 21-month series of hearings<sup>132/</sup> the Commission set a rate of return ranging from 7 to 7.5 percent and ordered after reconsideration a reduction in interstate rates valued at \$100 million per annum. It also established methods for separations, and transferred \$85 million in revenue requirements from intrastate jurisdiction to the federal. Phase 1B of the hearings concerned rate making principles, and covered a three-year period, 1966-1969. The result was a statement which was a compendium (vaguely reminiscent in its indeterminacy of the Smyth v. Ames formula) rather than the needed guide lines for pricing.<sup>133/</sup> Critics have observed that effectively no decision on the issues was taken; that it reached only a summary of the contending positions, acknowledging that any, all or none of the viewpoints may or may not be relevant to any particular ratemaking process; that there was a lack of any agreed upon common ground and clear promises were intimated of renewed battle when in the future the Commission again raises the issue of rate-making principles.<sup>134/</sup>

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<sup>132/</sup> In 69 days of hearings, 66 witnesses accounted for more than 10,000 pages of testimony and almost 3,500 pages of exhibits. A decision on this phase was issued on October 1, 1967.

<sup>133/</sup> The following factors were determined to be appropriate in considering the rate levels for each principal service classification: (1) The over-all rate of return; (2) fully distributed cost; (3) historical book costs; (4) long-run incremental costs and full additional costs; (5) price elasticity, income elasticity, and cross-elasticity; (6) existing and potential competition; (7) customer requirements; (8) the effects of existing tariff provisions; and (9) the effects of consumer alternatives.

<sup>134/</sup> The first critic was Commissioner Johnson in his dissenting opinion (FCC No. 16258, July 29, 1969), quoted approvingly by Trebing in "Common Carrier Regulation -- The Silent Crisis."



Cross-subsidization was not stopped and the delays in ratemaking were continued; the Commission has now had the reasonableness of TELPAK rates before it for almost 10 years and has still not determined the matter. The option is now open for the FCC to continue to regulate according to overall revenue requirements on a system-wide averaging basis as it has customarily done it, or to regulate specific rates by taking advantage of some market and cost studies which AT&T was persuaded to conduct on a consistent and continuing basis.

The third phase of the rate hearing -- that concerned with Western Electric prices is still to come. Whether the Commission will grasp that thorny bush remains to be seen.

The generally futile attempts by the FCC to regulate the telephone industry after 1934 were matched by an equally futile attempt by the United States Department of Justice to apply the antitrust laws to the Bell System so as to reduce some of the more egregious forms of its monopolization. In 1949, the Department of Justice brought suit against AT&T and Western Electric to divorce them, to proscribe contracts by which Bell operating companies were obliged to buy from Western Electric, and to compel AT&T, Western Electric and Bell Laboratories to provide patent licenses and technical assistance to all applicants on a nondiscriminatory and reasonable basis.<sup>135/</sup> It is interesting to note that the groundwork for this suit had been laid in the special telephone investigation and that the FCC might equally well have brought the suit. In 1956, a consent decree was agreed to which substantially frustrated the Government's original

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<sup>135/</sup> The remedies sought and the allegations of the complaint are to be found in Hearings before the Antitrust Subcommittee (No. 5) of the Committee on the Judiciary, 85th Cong., 2nd Sess., Part II, Vol. 1, pp. 1669-70.

intention and substantially satisfied AT&T<sup>136/</sup> It was disclosed by a Congressional investigation that the consent decree was the result of Bell System influence over the Attorney General, the FCC

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<sup>136/</sup> The decree "...did not require separation of Western Electric from A.T. & T. or dissolution of Western into three manufacturing concerns. It did not require that A.T. & T. and its operating companies buy telephone equipment only under competitive bidding. Nor did it require Western to sell to A.T. & T. its 50 percent stock ownership in the Bell Telephone Laboratories. The decree did not enjoin arrangements between Western Electric and Bell operating companies making Western the exclusive purchaser, supplier, developer, storekeeper, installer, repairer, and junker for the Bell System. Nor did it enjoin arrangements between A.T. & T. and the Bell operating companies which, among other things, enable A.T. & T. to specify the equipment to be purchased by them and to direct their operations, although all of the above types of relief were sought in the complaint.

"The decree permits Western Electric to continue as a virtually wholly owned subsidiary of A.T. & T. and to continue to hold 50 percent stock interest in the Bell Telephone Laboratories. The decree permits the A.T. & T. long lines department and the Bell operating companies to continue to buy substantially all their telephone equipment from Western Electric without competitive bidding. It permits Western to maintain its relationship with the Bell System and thus be in a position to continue to sell more than 90 percent of all telephones, telephone apparatus, and equipment sold in the United States....

"In order to facilitate regulation by State and Federal utilities commissions of rates proposed by Bell operating companies, the decree requires Western to maintain cost-accounting methods consistent with the generally accepted accounting principles that afford a valid basis for determining the cost to Western of equipment sold to A.T. & T. and the Bell operating companies for use by them in furnishing common carrier communications services (taking into account the magnitude and complexity of the manufacturing operations involved). It might be added that the defendants have concluded that the accounting system of Western which was in effect prior to the decree meets these criteria." Ibid., pp. 1671-2.

and the Department of Defense 137/ The investigating committee concluded:

"It appears that, with one sole exception, every significant idea that was adopted by the Government and ultimately approved by the court in this case originated with the defendants. The Committee is amazed at the alacrity with which not one, but three responsible agencies of Government absorbed,

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"Although primary responsibility for the settlement lies at the door of the Attorney General, the activities of the Defense Department and of the Federal Communications Commission in connection with the case also leave much to be desired. From the time when the defendants first demurred at standing trial, the Department of Defense swallowed whole and vigorously espoused the A.T. & T. thesis that six of the officials were indispensable to the defense effort. In so doing the Department officials made no independent investigations, but uncritically accepted this thesis as the Department's position. Further, Defense Secretary Wilson went so far as to send the Attorney General a letter urging settlement of the A.T. & T. suit on a basis favorable to the defendants, without revealing that the letter was actually 'ghost written' by A.T. & T. The committee regards these as instances where Defense Department officials abdicated to the Bell System their official responsibility....

"Second, and more important in its impact on the A.T. & T. settlement was the Commission's action, when it replied to the Department of Justice concerning the adequacy of existing regulatory machinery to supervise Western's prices to the operating companies, in deleting two vital matters from the considered representations of its own technical staff. Thus, in advising the Department of its belief that existing regulatory powers could 'provide substantial safeguards against possible abuses in fixing the prices of Western for equipment and services supplied to the telephone companies in the Bell System', the Commission suppressed the caveat of its staff that effective regulation depended upon the adequacy of the resources at the command of the agencies, although only a few regulatory agencies receive appropriations sufficient for such a job. Also the Commission excised from its reply to the Attorney General reference to the fact that its staff was unable to make a clear-cut comparison between the rates being charged by Western and the rates that would be charged in the competitive market envisaged by the complaint. The Commission thus converted its contribution to the antitrust settlement into a distorted and inadequate set of half-truths." Report, of the Committee sup. cit., pp. 292-3.

adopted, and promptly republished these ideas as their own, as bases for the ultimate settlement.<sup>138/</sup>

Federal Telegraph Regulation, 1910 on.

As noted earlier ICC regulation was nominal, 1910 to 1934. While the telephone industry preferred to be left alone by the FCC, the telegraph industry, because of its accumulated problems, inevitably invited regulatory attention. From 1934 to 1939, the FCC's concern with telegraph was to institute the accounting regulations and reporting procedures required by the Communications Act, to receive tariff filings and to analyze and assist the industry to rationalize some of the more obvious absurdities of its tariff provisions and, in 1938, to hold a hearing on and deny a joint request of Western Union and Postal Telegraph for a 15 percent rate increase.<sup>139/</sup>

Postal Telegraph was unprofitable and heavily in debt to the Reconstruction Finance Corporation and by 1939 it appealed to Congress for permission to merge with Western Union. The Senate Committee on Interstate and Foreign Commerce instituted an investigation and the FCC provided the staff work. In 1943 Congress amended the Communications Act to permit mergers of domestic telegraph carriers upon approval of the FCC, and in September, 1943, such approval was given to the merger of Western Union and Postal Telegraph. Recognizing

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<sup>138/</sup> Report, p. 291.

<sup>139/</sup> FCC Annual Report to Congress, 1938, p. 28. No full examination of operating expenses, rate structures, rate base and rate of return was attempted.



that the telegraph industry was handicapped by a stagnant technology, low labour standards, a chaotic rate structure, poor administrative capacity, and poor standards of service, the FCC attempted to force the merged company to plan effectively to remedy these defects.<sup>140/</sup> Meanwhile, during World War II, the FCC concerned itself with the speed, accuracy and adequacy of telegraph service, and prescribed standards to be achieved, as well as ordering discontinuance of non-telegraph activities such as greeting messages.

The modernization program which Western Union proposed had three basic elements. For transmission, it divorced itself from the railroads where open wires strung along rights-of-way were technically obsolete for telegraph traffic and committed itself to micro-wave links between major metropolitan centres, supplemented with telegraph channels leased from the Bell System. The handling of telegraph

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<sup>140/</sup> "In the interest of providing a completely adequate telegraph service in keeping with the technical accomplishments and public requirements, it is expected that the company will have developed completely and submitted to the Commission, one year from the effective date of the merger, a comprehensive plan for converting, within the shortest possible time, its existing facilities into a modern, efficient nation-wide communications system capable of effectively competing with other communications services. It was also concluded that the merger would enable elimination by the merged company of many uneconomic expenditures incurred by reason of competitive conditions which, until merger, were a continual drain on the resources of the industry; that merger would permit a unified management of the domestic telegraph industry and facilitate long-term planning for the modernization of service standards; and that through the elimination of duplicate operations, the ensuing consolidation of the personnel of the two companies would afford relief from the wartime manpower shortage, with consequent betterment of the working conditions of the labor force as a whole, possible curtailment of turnover trends and a resulting increase in efficiency and productivity. It was expected that the financial condition of the merged company would be stronger than that of either of the merged companies separately, and the merged company would be better able to undertake the steps necessary to provide improved service at reduced cost to the public." FCC Annual Report to Congress, 1944, p. 35.

messages at switching centres had been manual and expensive, and largely automatic "reperforator-switching systems" were to be installed at 26 large message-handling centres. Capital requirements for the new plant were \$72 million. Thirdly, duplicating public terminal offices inherited from the rivalry with Postal Telegraph, were to be closed. This program was approved by the FCC. That agency was powerless, however, to halt the erosion of telegraph service which ensued as a result of industry policy and of historical handicaps which now returned to frustrate the modernization program. The National War Labor Board immediately after World War II ordered two wage increases amounting to \$49 million per year and \$31 million in retroactive pay adjustments. Western Union responded with a rigorous economy program (by closing terminal offices, replacement of company-operated offices by agency offices, shortening hours of service at terminal offices, labor force reductions) and with requests for two rate increases on public message classifications. Foreseeing that Western Union was caught in a vicious spiral of new capital requirements-operating-deficit-economy-service-reduction-rate-increase-traffic-decline-deficit links, the FCC proposed in 1947 to conduct a special investigation of the telegraph industry, but upon refusal of the House Appropriations Committee to approve the \$375,000 budget request, did not seek to get the cut restored

by the Senate.<sup>141/</sup> When the FCC, 15 years later, conducted a special investigation of the telegraph industry, it found that

"The most distinctive feature of the message telegraph service in the postwar period has been the continuing decline in message volume. This decline has been accompanied by continually rising prices, contraction in the availability of service, little improvement in the quality of service, a gradual levelling off and downturn in message revenues, and a diminishing share of the telegraph market for Western Union."<sup>142/</sup>

But the significance of the plight of Western Union in the postwar period is not measured by the importance of the declining public message telegraph service. The larger significance for regulatory policy purposes was that Western Union, in modernizing its obsolete plant in the late 1940's was one of the first manifestations of the implications of the postwar telecommunications

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<sup>141/</sup> The Hoover task force staff report found the FCC guilty of neglecting to press for the investigation budget and the House Appropriations Committee was also criticized. "It has been made entirely clear to the Committee that a comprehensive survey could not be made with the Commission's existing common carrier staff which already was unable to begin to cope with the common carrier regulatory problems. The effect of the Committee's action was to make it impossible for the Commission, without neglecting other functions, to make the study required to formulate the basic policies to govern the regulation of the telegraph industry." Golub, op. cit., p. III-38.

<sup>142/</sup> The number of messages carried by the public message service fell from 236 million in 1945 to 97 million in 1964 -- a decline of almost 60 percent. Eleven rate increases on such classifications had been approved by the FCC in the same period for a cumulative increase of 161 percent. Company-operated public offices had shrunk from 3,474 to 1,673; agency-operated offices from 26,213 to 11,764, while communities served (with primary representation) had fallen 58 percent from 20,668 to 8,597. By 1964 telegraph service was "nation-wide" only by virtue of major dependence on telephone service for pick-up and delivery. Report of the Telephone and Telegraph Committees of the Federal Communications Commission in the Domestic Telegraph Investigation, Docket No. 14650, April 29, 1966, pp. 51-81.

technology. We remarked in the Introduction that the microwave-computer-satellite wave of telecommunications technological development had made the old isomorphic relation of monopoly-corporation-discrete-technology-discrete-market obsolete as an instrument of national policy and that thereafter definition of industry and market structure became the essential building block. Both the Bell System and Western Union were building micro-wave systems in the immediate postwar period and it was inevitable that they would collide with each other in striving to develop the TV program transmission market and the private line markets for data and mixed data/voice service. Apart from analyzing the causes and possible remedies for the plight of the public message telegraph service, the FCC special telegraph investigation was concerned with the merits of Western Union's charges that the Bell System was employing its vastly greater resources to monopolize these markets. In requesting the investigation, Western Union attributed



its plight to just such pressures.<sup>143/</sup>

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<sup>143/</sup> "About a year ago, the President of Western Union reviewed with the Commission certain factors affecting the telegraph company's ability to maintain a high quality of message service. Western Union stated that the Bell System's activities in the telegraph field have been the most critical external factor affecting the telegraph company's operations since the merger with Postal Telegraph in 1943. Western Union alleged 'loss-leader' price cutting and 'cream skimming' of record communications by the telephone company as illustrated by returns of less than 2% on Bell's TWX and Private Line Telegraph Services prior to 1953 and 1958, respectively, in contrast with a return of more than 10% on its noncompetitive Private Line Telephone Service before the private line telephone rates were reduced in 1958 at the Commission's order. The preservation of a nationwide public telegraph system, urged Western Union, requires the adoption of five basic policy suggestions as follows:

(1) Requirement that all private wire telegraph services, including TELPAK and multiple channel services, stand on their own full-cost rate bases and that rates for these services be fully compensatory.

(2) Positive support by the Commission of Western Union efforts to acquire TWX as being directly competitive with telegraphic message services; and requirement, meanwhile, that TWX stand on its own full-cost rate base and that rates for this service be fully compensatory.

(3) Requirement of industry-wide interconnection among common carriers for voice, alternate record-voice, TV and other telecommunications services, as well as for telegraph services.

(4) That the Commission reconsider or at least limit the future effectuation of the private microwave decision [the Above-890 decision: In this proposal Western Union was identifying the only non-Bell threat it was suffering from].

(5) That the Commission maintain, on a continuing basis, surveillance of the record activities of telephone companies, for the purpose of ensuring continuance of equitable competitive conditions in the communications industry once they have been established." FCC Memorandum Opinion and Order initiating the Special Telegraph Investigation, May 23, 1962. Domestic Telegraph Report, pp. 26-7.



In summarizing its recommendations, the FCC explicitly recognized that industry-market structures had become its basic building blocks (rather than corporations) when it said:

"We have sought to develop a set of recommendations for changes in public policy and market structure which would facilitate (1) the maintenance and expansion of the message telegraph service by carrier experimentation and better adaptation of the offering to future needs; (2) innovations which will reduce average unit costs; and (3) elimination of practices and restraints that impede intercarrier competition, so that all carriers may be reasonably flexible in adapting to evolving consumer requirements for alternate voice-record, data transmission, and private line services....

"The general effect of the implementation of our proposals would be to restructure segments of the domestic communications markets in order to produce demonstrable benefits for message telegraph service, facilitate the task of interstate regulation, and improve the range and variety of services available to the consumer. As a result of these proposals Western Union would find its earnings base enlarged and its general position, in both the record message market and the competitive record and alternate voice-record services, improved."<sup>144/</sup>

The Commission took the occasion to review public policy toward the domestic communication industry:

"The aspect of national communications policy which has exerted the greatest long-term structural effect on the industry has been the consistent position of Congress that the nation should not be compelled to rely upon a sole supplier for communications. That is, national policy has consistently stood against the establishment of a monopoly in domestic communications. This position was in evidence as early as the Kingsbury Commitment in 1913, and has been

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<sup>144/</sup> Ibid., pp. 309-335.

manifest in all the major policy determinations of Congress since that time, including the Communications Act of 1934 and the Domestic Merger Act of 1943. This policy has also been enunciated by various Congressional committees....

More recently, the Commission expressed its concern over total monopoly and the need to maintain alternative carriers, in the so-called TAT-4 decision. In refusing to authorize AT&T to provide alternate voice-record service in international communications, the Commission made it clear that 'It is in the public interest that we assure the viability of the record carriers by protecting them from the losses they would inevitably suffer were AT&T permitted to provide this voice-record service.' Again, the controlling consideration was to facilitate consumer choice and allay dependence upon a single source of supply. The principle of market shares, embodied in the TAT-4, became the means to this end."<sup>145/</sup>

The Commission's proposals following the special telegraph investigation were as follows:

- (1) "We propose that the Commission direct its regulatory activities so as to foster and require an integrated record message service, with Western Union as the carrier to provide this service."<sup>146/</sup>
- (2) "We recommend that the Commission, subject to the applicable provisions of law, encourage the prompt completion of negotiations looking towards acquisition of Bell's TWX service by Western Union."<sup>147/</sup>
- (3) In an effort to stop the cost-push cycle of rate

increases and traffic declines, it proposed that if Western Union should request further rate increases in the near future, the company

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<sup>145/</sup> Ibid., p. 212-15.

<sup>146/</sup> The record message system envisions the integration of TWX, Telex, Tel(T)ex, and the message telegraph services. Domestic telegraph report, p. 311.

<sup>147/</sup> Ibid., p. 313.

be required to demonstrate that such increases would be more productive than promotional rates or stabilized rates.

(4) It proposed that the company be required to show cause why a program of promotional pricing should not be immediately introduced.

(5) It proposed that Western Union be required to develop a system of tariffs for the long run which would approximate optimal relationships to maximize demand in each submarket of the message telegraph market.

(6) It proposed that adequate speed-of-service standards be established and enforced with sanctions.

(7) In order to permit Western Union to coexist with the Bell System it proposed that the Communications Act be amended to give the FCC clear authority to regulate the conditions and charges under which one carrier provides communications facilities to another for the rendition of service to the public; with such authority it could cope with the problems created by Western Union's dependence on leased channels from the Bell System. Further it proposed that the FCC reconsider its earlier refusal to permit Western Union to enter the market for transmission of TV program service through interconnection with the Bell System.

(8) In the markets in which Western Union and Bell would continue to compete (data and voice-record), Bell and Western Union should be required to fix rates that yield a fair rate of return for

directly competitive services. "If the rates of one carrier are lower at a fair rate of return, then the other carrier would have to match such lower rates to stay in the market, even though those lower rates may not produce a fair rate of return for that carrier."<sup>148</sup>

(9) "In adopting a position in favor of an integrated record message service, we recommend that the Commission adopt an affirmative policy against permitting AT&T to re-enter the exchange telegraph market by making a teletypewriter offering over the toll telephone network."<sup>149</sup>

In connection with the recommendation regarding rate making in the competitive markets, it is significant to note the results of the so-called 7-way cost study. It will be recalled that the Commission had customarily relied on system-wide averaging of revenues and costs for the telephone industry. In what the special telegraph investigation report refers to as a "landmark" study, it presented a full cost allocation among all the major categories of interstate telephone service in which total "embedded interstate investment as well as expenses" were distributed among the seven categories. The results showed the following ratios of net operating earnings to net investment for "total day" operations for the 12 month period ending August 31, 1964: Message toll telephone, 10.0%, Teletypewriter exchange service, 2.9%, Wide Area Telephone Service, 10.1%, Telephone Grade Private Line, 4.7%, Telegraph Grade Private Line, 1.4%, TELPAK, 0.3%, All other, 1.1%, and Total, 7.5%.<sup>150</sup> While

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<sup>148</sup>/ Ibid., p. 326.

<sup>149</sup>/ Here they were limiting the possible expansion of Data-Phone service. Ibid., p. 332.

<sup>150</sup>/ Ibid., p. 202. All investment and expenses, of course, were unexamined for reasonableness.



deferring judgment on the reasonableness of the rates to the Telephone rate proceeding, the Commission hinted that Western Union's charges of below-cost pricing by the Bell System were well-founded.<sup>151/</sup> This evidence will be discussed in section (d) in connection with the behaviour of the firm under regulatory constraints.

The time since the Special Telegraph Investigation report is still short and perhaps it is too soon to evaluate FCC performance in pursuing its recommendations.

#### FCC and Communications Satellites.

The role that agency played in the formative period of planning for communications satellites relates directly to its performance in regulating telephone and telegraph and must be summarized. We have noted that the FCC dutifully deferred to Congress in 1939 the question of the amendments it considered necessary for proper enforcement of the Communications Act regarding the Bell System, and that it refrained from exercising its undoubted statutory authority over that organization for most of the time since 1934. We have noted that in the Above-890 case where it had the leverage of important computer and other private line customers, it opened up slightly for competition the markets previously dominated entirely by the AT&T-Western Union duopoly. But when the full brunt of the communications satellite research and development work focussed in Washington in the winter of 1960-61, the FCC acted vigorously to

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<sup>151/</sup> Ibid., pp. 206-8.



protect the common carrier monopoly of the Bell System.

By 1959, seven major aerospace corporations, one of which was AT&T, were jockeying for position to innovate communications satellites. The heartland of the Bell System common carrier monopoly was threatened: the domestic switched network and long distance transmission facilities. In order to protect that monopoly heartland, it was imperative for Bell to see to it that when satellites are innovated: (a) they should be confined if possible to the international market (which although monopolized for voice traffic by Bell was of minute proportions compared with the domestic market), (b) they should be operated by an entity in which Bell would be the sole or a dominant interest (i.e. an entity dominated by international common carriers), and (c) they should be operated by a private commercial entity (not a government entity). Initially, AT&T proposed to the National Aeronautics and Space Administration that AT&T should become the chosen instrument for communications satellites and offered to provide all the capital required. The system proposed was a random-orbit, medium altitude system designed for international communications. NASA declined. Substantially the same proposal was put to the FCC, which in January, 1961 gave it an experimental license for the satellite which was later named Telstar. The jockeying continued. In October, 1960, the NASA Administrator proposed placing communications satellites in the hands of common

carriers.<sup>152/</sup> On the last day of Eisenhower's term of office, a White House press release used the same phrases.

The aerospace giants were busy that winter. Lockheed, the recipient of the largest volume of DOD contracts felt that it had a unique capability in satellite-system planning, design, engineering and operational services and that it should have an equity in whatever entity was proposed; it also produced an extensive study of the communications satellite market.<sup>153/</sup> General Electric, another large DOD aerospace contractor, established a subsidiary, Communications Satellites, Inc., as a framework for an operating company and proposed that for similar reasons aerospace as well as common carrier and public stockholding would be appropriate.<sup>154/</sup> Hughes Aircraft, a third large aerospace contractor was similarly interested. NASA hedged and invited competitive bids for experimental satellites. Seven competitive proposals were received (including one from AT&T), and on technical grounds the contract was awarded to

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<sup>153/</sup> "Traditionally, communications services in this country have been provided by privately financed carriers competing with one another to serve the public interest under federal controls and regulations. There seems to be no reason to change that policy with the advent of communications satellites." Speech by T. Keith Glennan.

<sup>154/</sup> The study was done by Booz, Allen and Hamilton. See statement by Cortlandt S. Gross, President, Lockheed Aircraft Corp., in Hearings before the Subcommittee on Monopoly of the Select Committee on Small Business, U.S. Senate, 87th Cong., 1st Sess., August 2 et seq., 1961, pp. 196-201.

<sup>155/</sup> Ibid., pp. 390-398.

RCA on May 18, 1961. On the same day the NASA Administrator offered to provide AT&T with launch facilities if it was still interested in putting up its Telstar satellite, with AT&T to bear the cost of the payload and launching.<sup>156/</sup>

The definitive action which determined that communications satellites were to be privately, commercially operated rather than through a governmental or quasi-governmental entity and that the aerospace interests should not intrude into the Bell sphere was taken as early as February 28, 1960 when the FCC and NASA signed a formal agreement. By that agreement, FCC took responsibility for organizational preparations, while NASA took responsibility for the R. and D. aspects of the satellites. And the policy for

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<sup>156/</sup> Testimony of James E. Webb, in sup. cit., pp. 280-1.

organization embodied in the agreement met the essential Bell requirements.<sup>157/</sup>

To anyone accustomed to FCC timidity in dealing with Congress and the industry what followed was near-farce. The FCC initiated a rule-making hearing on March 29, 1961 for the purpose of ascertaining "...the various methods by which participation in such [communication satellite] system or systems by all interested present and future international communication common carriers and others can best be effectuated on an equitable, nondiscriminatory and lawful basis."<sup>158/</sup>

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<sup>157/</sup> The FCC and NASA "...affirm the following propositions as guidelines for the coordinated conduct of their respective activities: (1) The earliest practicable realization of a commercially operable communication satellite system is a national objective. (2) The attainment of this urgent national objective in the field of communications may be accomplished through concerted action by existing agencies of Government and private enterprise. (3) The statutory authority of NASA and the FCC appears adequate to enable each agency to proceed expeditiously with the research and development activities necessary to achieve a commercially operable communication satellite system. Special problems which may arise in connection with the regulation of a commercially operable system are being explored by both agencies, and may result in legislative recommendations at a later date. (4) In accordance with the traditional policy of conducting international communications services through private enterprise subject to government regulation, private enterprise should be encouraged to undertake development and utilization of satellite systems for public communications services....(7) The FCC, in appropriate cooperation with other Government agencies, will continue to direct its activities in this field toward the development of communications policy and the implementation and utilization of space telecommunications technology through the licensing and regulation of U.S. common carriers." (Emphasis added).

<sup>158/</sup> Docket No. 14024, Notice of Inquiry. Federal Communications Commission.



The Department of Justice then recommended inter alia that corporations engaged in production and sale of communication and related equipment (e.g. aerospace manufacturers) be permitted to participate in ownership of the system. General Telephone and Electronics Corporation (a domestic common carrier second only in size to Bell, and with foreign subsidiaries), Lockheed, and General Electric responded with interest to the FCC's inquiry. The first report by the FCC on the docket concluded that participation in the venture should be limited to existing international common carriers (thereby accepting completely the monopoly-corporation conception of such common carriers) and excluded Lockheed, General Electric and General Telephone from possible equity-holding.<sup>159</sup>

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<sup>159</sup>/ Among the reasons given for a joint venture of the existing common carriers: "(b) Communication via satellite will be a supplement to, rather than a substitute for, existing communications systems operated by the international common carriers, thereby becoming an integral part of the total communication system of each such carrier....(d) By reason of their experience in and responsibility for furnishing international communications service, the international carriers themselves are logically the ones best qualified to determine the nature and extent of the facilities best suited to their needs and those of their foreign correspondents, with whom they have longstanding and effective commercial relationships and who necessarily will have a substantial interest in the operations of any satellite system. (e) Under the Communications Act, the international carriers are obligated to furnish the public with adequate, efficient service at reasonable charges, and this obligation can best be discharged by those carriers maintaining, as far as possible, the greatest degree of direct control and responsibility over the facilities employed in this service." Against admitting the excluded companies: "...such participation may well result in encumbering the system with complicated and costly corporate relationships, disrupting operational patterns that have been established in the international common carrier industry, and impeding effective regulation of the rates and services of the industry." Ibid., pp. 494-5.



The FCC then conferred with the existing common carriers and formed them into an ad hoc carrier committee for the purpose of developing an organizational plan, providing the auspices in order to protect the carriers from possible antitrust suits.<sup>160/</sup> The Ad Hoc Carrier Committee in its report in October, 1961, proposed that communications satellites be administered by a nonprofit satellite corporation. Its assets would be owned in undivided interest and included in the common carrier corporations' rate bases. Its board of directors would consist of two members for each carrier who invested \$500,000 or more; three directors appointed by the President of the United States and one director representing all U.S. carriers who did not invest \$500,000 or more but which might lease satellite facilities. Of the pledged capital, AT&T would provide about four-fifths.

As a consequence of the mounting criticism of the FCC-Bell drive, in Congress and elsewhere, President Kennedy in July, 1961, placed responsibility for forming national satellite policy in the National Aeronautics and Space Council, an advisory group headed by Vice President Johnson. The FCC's strenuous activities to implement the Bell System plan were thereafter in the form of testimony before the many Congressional committees which considered the Kerr bill -- itself an uneasy compromise between Bell pressures and those from

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<sup>160/</sup> Federal Communications Commission, Docket No. 14024. Supplemental notice. July 21, 1961.

other industry quarters.<sup>161/</sup> Opponents of the Kerr bill mounted a filibuster in the Senate but were overwhelmed (in the first cloture on debate since 1927) by the massive lobbying on behalf of the bill, capped by the brilliant public relations stunt of AT&T in putting "Telstar" into its medium altitude orbit.

The resulting COMSAT organization, created by the Communications Satellite Act of 1962, embodied most of the Bell System objectives. It was a private commercial operation. Its destiny was effectively directed to international common carrier operations.<sup>162/</sup> The existing international common carriers were allowed to include their stock ownership in COMSAT in their rate bases, and AT&T emerged as holder of about two-fifths of its stock. The threat of satellites as a competitive alternative to Bell's domestic landline system was averted for the immediate future. In 1966 the Ford Foundation and Carnegie Commission on Educational Television asked the FCC for permission to use communications satellites for broadcast program transmission in the domestic market, the profits from it to be used

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<sup>161/</sup> A random example: In criticizing the Administration bill in a congressional hearing, the FCC objected to a provision under which "...entities such as the government, who otherwise would be customers of the carriers, [might] directly lease channel facilities from the satellite corporation. In our opinion, such a construction would raise a most serious question of policy that should be carefully considered. For this could result in the satellite corporation competing directly with the common carriers, and possibly deprive those carriers of essential revenues, thereby leading to financial difficulties for the carriers." Quoted in Telecommunications Reports, March 5, 1962, p. 26.

<sup>162/</sup> In a dissenting opinion to the Ad Hoc Common Carrier report, Western Union Telegraph Co. stated "Western Union believes that there is a domestic requirement for satellite operations." pp. 54-5.

to support educational television. The American Broadcasting Company and Columbia Broadcasting System also proposed domestic satellites. The FCC has avoided decision on these proposals for four years. In sum, the FCC policy toward communications satellites, like its policy on rate regulation for the switched telephone network has been consistently protective of the monopoly corporation interest. Apart from its regulatory activities over telegraph (when and only when the telegraph industry requested help from it), the FCC has seemed to prefer the private interest over the public interest in regard to telephone and telegraph regulation. Despite the best efforts of the Bell System and the FCC, however, the communications satellite technology has escaped total reduction to the will of the monopoly telephone corporation. Comsat Corporation as a separate entity has sought to enter the domestic telecommunications markets. And, as noted in the Introduction at page 10, AT&T seems to have conceded the inevitability of more than one entity in those markets.

#### FCC and CATV

The thrust of the post-World War II micro-wave-computer-satellite-technological surge introduced another major problem in CATV which forced the FCC to depart from reliance on the monopoly corporation as the essential building block for telecommunications policy. Originating more than two decades ago as an innocent supplement to the topographic inadequacies of over-the-air TV broadcasting, CATV because it employed micro-wave-coaxial cable technology

contained within it the seeds of a major transformation of markets and industry structures in telecommunications in the United States. Originally when CATV did not compete for audiences with over-the-air TV stations, the FCC declined to exercise jurisdiction over it. By the 1960's CATV had developed to the point where it was competing for audiences with local TV stations and the FCC asserted jurisdiction and proceeded to slow down and control its growth with a succession of restrictive policy statements.<sup>163/</sup> The substance of the rationale for this regulation was

"...the continuing effort of the FCC to develop an adequate multi-channel capability without abandoning its traditional goal of promoting the growth of local over-the-air stations."<sup>164/</sup>

In a proposed rule making for CATV in the winter of 1968-69, the FCC for the first time faced the question of ownership of CATV. By that time about 25 percent of the CATV industry was owned by broadcasters and about 30 percent by telephone companies.

Without going into details a few salient aspects of the CATV technology appear clear. As a broadband service, CATV has the capability of providing enough channels for a community to encompass all of its TV viewing, radio listening, assorted possible services such as banking, facsimile newspapers, mail delivery and pickup, and

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<sup>163/</sup> President's Task Force Final Report, Chap. 7, pp. 17-18.

<sup>164/</sup> Ibid., p. 18.

telephone and telegraph service.<sup>165/</sup> If sufficient resources were devoted to its development it could displace the functions of many institutions, and could permit development of a "wired nation". As a means of transmission and reception of these services it is a local natural monopoly in the sense that duplication of its local plant would be uneconomic and inconvenient although as networking of CATV systems develop it could take competitive form. As a "highway" for conducting the many possible services to which it is amenable, it has sufficient potential capacity to permit a substantial degree of competition between entities providing

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<sup>165/</sup> The effect on other industries may be inferred from the following estimates of annual savings were the proposed videophone-broadband cable network instituted: Domestic air travel, over \$6 billion; highways, over \$6 billion; police protection, over \$3 billion; fire protection, over \$1 billion, post office, nearly \$6 billion; recreation, over \$28 billion. Industrial Electronics Division of the Electronics Industry Association, The Future of Broadband Communications, October, 1969 filing with FCC, quoted in Smith, Ralph Lee, "The Wired Nation", The Nation, May 18, 1970, p. 606.



services over the "highway"<sup>166/</sup> The threat which this technological prospect poses to the telephone and telegraph industries in the United States is formidable. Moreover it is powered by the same group of industries which pioneered in computer-aerospace-micro-wave technology which have upset the common carrier monopolies in the private line and related market areas: IBM, General Electric, Litton Industries, etc. who have been focussing their policy proposals to the FCC through the Industrial Electronics Division of the Electronics Industry Association.

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<sup>166/</sup> The President's Task Force report on technology said that broadband loops installed for CATV are "...becoming increasingly attractive as a distribution mode. Although cable systems are substantially limited today to television distribution, they may be economic media for some point-to-point services as well. As a distribution loop, broadband cable represents a substitution of transmission for switching. While in a network configuration such as the message telephone system, signals are sent only to the terminal for which they are intended, a broadband cable distribution loop carries every signal to every terminal on the loop. The compensatory saving is in the switching gear. A cable system uses frequency-division switching; a customer simply tunes in the frequency channel he wants to receive. Once a decision is made to install cable for television distribution, it is relatively inexpensive to provide additional transmission capacity for other services through increased cable bandwidth. (It has been estimated that the capacity of a 20-channel video cable could be expanded by 50% at an additional cost of only 20%. Those extra 10 video channels could provide the bandwidth equivalent of 20,000 voice channels, exclusive of frequency spacing to prevent interference). This extra capacity could, in principle, be used for any communications service, including point-to-point voice traffic." Ibid, p. 53.

The telephone industry interest in CATV has been pursued by outright ownership of CATV systems and by other means. Build-and-lease-back to CATV enterprises has been a favourite device by which telephone companies have protected their market position while facilitating entry to CATV operators who would otherwise have to negotiate franchises with municipalities and easements with property owners directly. Upon protest against this device as discriminatory, the FCC ruled that construction by a telephone company of a cable system for leaseback purposes would require a certificate of public necessity and convenience under Section 214 of the Communications Act. Following protests that the certificates were being issued routinely, the Commission in February 1970 ruled that while leasebacks would be permitted, the potential CATV operator should have the clear alternative of using telephone poles or conduits at reasonable fees. At the same time, the FCC prohibited telephone companies under its jurisdiction from operating, either directly or through affiliates, cable systems in areas where the telephone company provides service.

Slowly the policy issues concerning the future shape of CATV are emerging before the FCC. In addition to the issue of monopolization (by telephone and broadcast interests), there are three other central issues. One is the matter of the common carrier status of the CATV operator. The CATV operators oppose common carrier status, as might be expected from their original and still primary interest

in carrying broadcast signals. The FCC has given permission to CATV systems to devote one or more channels to common carrier service in its 1969 rule-making. Linked to the question of common carrier status is the question of whether the CATV systems are subject to state public utility regulatory commissions. A number of states have by law given their commissions jurisdiction (Rhode Island, Connecticut, Nevada and Vermont) and a recent Supreme Court ruling has found concurrent federal and state jurisdiction. The third central issue is what should be the structure of the CATV industry? The Industrial Electronics Division of the Electronics Industry Association has recommended that a clear distinction be made between the entities which provide the end-use services (broadcast program distribution, etc.) where the structure should be as competitive as possible, and the entities which provide the physical facility, which presumably should be monopolistic in the local community, but not if CATV networking is conducted. To this issue may be added a third consideration: It has been proposed that a clear separation in ownership and control be maintained between (1) equipment manufacturers and suppliers, (2) the operation of the physical facility, and (3) the rendition of end-use services.<sup>167/</sup>

To sum up this review of FCC regulatory performance concerning common carriers: Evidenced by the Above-890 decision, the

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<sup>167/</sup> Smith, Ralph Lee, sup. cit., p. 604.

MCI and Carterfone decisions, the "market shares" policy enunciated in the report on the special telegraph investigation, and the slow recognition of the sui generis nature of the CATV industry, the pressures of the micro-wave-computer-satellite technology have made obsolete the notion of a monopolistic corporation with discretion to enter a full range of markets=with averaging of costs and rates behind the shield of the regulatory commissions, although the FCC<sup>7</sup> has not fully made the transition.

(d)

Effects and Results of U.S. Experience

To analyze the larger significance of the preceding three sections of this chapter, we now turn to three questions: (1) Has regulation of telephone and telegraph in the United States substantially accomplished its purposes? (2) What difficulties does regulation of telephone and telegraph in the United States now face? (3) What implications might Canada draw from United States experience in regulating telephone and telegraph?

(1) Has regulation of telephone and telegraph in the United States accomplished its purposes substantially? The short answer is it has not. The purposes of regulation, however diversely stated, boil down to three: To establish and maintain equity in the treatment of all classes of customers; to improve performance of the industry; and to bring the monopolies under effective, i.e. accountable, control of the state. These objectives were sought to be attained through statutes which embodied regulatory procedures compatible with overall regulation of industrial monopoly corporations in terms of services to be provided and rates to be charged. In the event, both the state and federal regulatory commissions were proved by more than half a century of experience to be ineffective in both of these respects. The division of jurisdiction between federal and state authorities made this inevitable in telephony:

"Since the Bell system was really a conglomeration of local, regional and national monopolies in one company, the System's market jurisdiction far



outflanked the regulatory jurisdiction of any commission. Thus, the costs for service for Bell had to be allocated among the multitude of regulatory jurisdictions before jurisdictional revenue requirements could be evaluated. For the most part, the active interest of the agencies has stopped with these broad issues of jurisdictional cost separations and revenue requirements. Due substantially to severe limitations upon budgets and professional staff, virtually all other substantive issues of economic regulation have been left to the expertise of the carrier."<sup>168/</sup>

The fact that the regulatory statutes lent themselves to the interpretation that what was intended was overall rate and service regulation of monopolistic corporations in practice meant that the regulatory agencies became identified with the corporations they regulated in protecting the latter against competition and effective criticism:

"Under the traditional philosophy of communications regulation, the possibility of altering the industry structure is either beyond the scope of consideration of regulatory policy or it is anathema on grounds that one can't regulate a monopoly unless you maintain the monopoly. This has tended frequently to bring about an identity of interest between the existing monopoly and the regulatory policy in protecting the market from interlopers and 'creamskimmers'. The commission itself may establish rules, procedures, or practices, the principal function of which is to protect the markets of the established carrier; or it may simply acquiesce by accepting without serious scrutiny policies and practices of the carriers that are directed to blocking entry into its markets. In the latter case, the very existence of the regulatory agency provides the communications carrier with substantial insulation from attack under the antitrust laws. And in either instance, an enormous burden of proof is placed upon anyone who dares to challenge the established industry relationships."<sup>169/</sup>

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<sup>168/</sup> Melody, William H., Market Structure and Public Policy in Communications. Transportation and Public Utilities Session of the 82nd Annual Meeting of the American Economics Association, New York, December 28, 1969, p. 5. Dr. Melody is a Canadian born and educated economist currently on the FCC staff.

<sup>169/</sup> Ibid., pp. 5-6.

The focus of commission attention in rate matters on the relation of the overall rate of return on the rate base to the revenue producing capacity of the whole rate structure has meant that

"...commission influence over carrier pricing practices has been minimal. There have been no guidelines by which effective regulatory control over price discrimination, interservice subsidization and predatory pricing have been exercised. Carrier pricing policies and practices have not developed within a framework of regulatory standards which have delimited the area of ratemaking discretion available to monopoly communications common carriers. The carriers have had virtually unlimited flexibility in ratemaking. Regulatory rules and practices have developed, the principal effect of which is to accommodate the monopoly carrier, and the agencies have passively accepted labyrinthine tariffs with restrictive protectionist provisions as consistent with traditional regulatory philosophy. Any and all kinds of price discrimination have been tacitly accepted in rate filings simply because there were no vociferous complaints by substantial interests. And when investigations have been undertaken, decisions have not been reached typically until many years after the rates in question have had their effect. Further, such matters as intercarrier contracts, division of revenue settlements and other agreements among carriers that significantly affect market relationships have not been viewed as important matters for regulatory scrutiny."<sup>170/</sup>

Looking at the rate structure of the telephone industry as a whole, one finds that the system-wide averaging of costs and revenues, linked with the arbitrary separation of investment and costs between the interstate and intra-state jurisdictions has produced a rate structure in which any correspondence between costs and rates is accidental, and unintentional. The operative principle is that rate-making by the Bell

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<sup>170/</sup> Ibid., p. 6. Dr. Melody cites as a footnote in this paragraph Trebing, H. M. and Melody, W. H., An Evaluation of Domestic Communications Pricing Practices in Volume 6 of Staff Papers, President's Task Force on Communications Policy.

Telephone System is a political matter. As stated in a RAND

Corporation study:

"...several industry representatives, with whom the author discussed this question, have stressed the political aspect involved in telephone pricing policies. The industry strives to set rates that are palatable to the State commissions, the voters, the FCC and to Congress. As one representative stated, to set rates strictly in accordance with costs would be ridiculous because people would not stand for it."171/

Thus Johnson found that message toll telephone service subsidizes private line services, interstate toll message telephone service subsidizes intrastate service and connecting telephone company service. He found evidence that short-haul interstate traffic does not cover its total cost while long-haul interstate traffic covers more than its cost. But for comparable mileage, intrastate telephone toll rates are 55% higher than interstate toll rates for person-to-person day service. With an emphatic caveat that the basis of evaluating interstate and intrastate profitability is the arbitrary quicksand of the separations procedures (and therefore, the present author suggests, as in Alice in Wonderland, a different separations procedure might change the relations between costs and rates), he concluded that the explanation for the paradoxes might lie in the fact that technological progress had reduced long-haul costs much more rapidly than local terminal costs. Clearly, federal and state regulatory commissions, absent the kind of authority which the Walker report had requested unsuccessfully, appear to be hopelessly

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171/ Johnson, Leland L., op. cit., p. 637.

confused by the Bell System's political sleight-of-hand in class of service rate making.

In his RAND Corporation study, Johnson developed a now generally accepted theory of the behaviour of the firm under regulatory constraint.<sup>172/</sup> This theoretical development established with mathematical rigour that under conditions of system-wide averaging, and with regulation relying on determination of the over-all rate of return, when the allowable rate of return exceeds the actual cost of capital, the firm is constrained to over-invest capital and to provide service to peripheral markets at less than long-run marginal cost in order to camouflage monopoly profits. This theory may explain why it was profitable for the Bell System to enter private line markets, even if they operated in them at zero percent return. It undergirds the natural monopolistic tendency for the Bell System to try to engross the market for data transmission, in light of its approaching saturation of the voice market, in order to be in a position to command a market which may have unforeseeable expansive potential. It also may explain why the Bell System found it profitable (by justifying monopoly profits in excess of the allowable rate of return from the switched network services) to make heavy capital investments in redundant plant (which could be justified in terms of quality-of-service

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<sup>172/</sup> Averch, Harvey and Johnson, Leland L., "Behavior of the Firm under Regulatory Constraint," American Economic Review, Vol. 52, December, 1962, pp. 1052-69. A. K. Klevorick, "The Graduate Fair Return," American Economic Review, Vol. 56, June, 1966, pp. 477-84; Westfield, Fred M., "Regulation and Conspiracy," American Economic Review, Vol. 55, June, 1965, pp. 424-43.



standards, and national defense stand-by capability). It also raises an interesting question concerning the Bell System's practice since 1910 of investing heavily in the Bell Laboratories for purposes of pure science and research and development.<sup>173/</sup> Such capital intensive practice was encouraged by the constraint of overall rate of return regulation. Granted that the state of the art was advanced by the performance of Bell Laboratories, and granted that this may have been in the public interest, the overall rate of return constraint may have helped create the micro-wave, computer, communications satellite technology which has for the past 15 years undermined the very telephone monopoly which overall rate of return regulation was originally conceived by the Bell System to protect. Probably, by pursuing its own rational self-interest, monopoly in the telephone industry has created the competitive forces which will undo its monopoly.

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<sup>173/</sup> Referring to this theory, Trebing says: "This is not the traditional argument that the firm will inflate their rate base or seek to substitute reproduction cost for original cost valuation in an effort to improve earnings. Rather, the theory describes a positive inducement for unwarranted expansion which enables the firm to retain or camouflage excessive profits in its public utility monopoly markets that would otherwise be lost through rate reductions. The firm can achieve such an expansion through various courses of action. The first is to maintain excess capacity through an excessive spread between system capacity and peak requirements. The second is to maintain high safety standards that require proportionally more capital. A third possibility is the selection of more capital-intensive combinations of plant that do not result in lower costs. Fourth, as Westfield has noted, there is an inducement toward increased equipment prices, or at best a minimum incentive to reduce such prices. Finally, there is an incentive to serve noncompensatory or peripheral markets at less than long-run marginal cost." Trebing, Harry M., "Common Carrier Regulation -- the Silent Crisis," sup. cit., pp. 314-15.



Possibly the definitive evaluation of the regulatory process was given by the President's Task Force Final Report:

"Rather than taking the place of competition in markets having pronounced natural monopoly features, regulation in the communications industry, in our opinion, has at times acted as a constraint on competition even in markets which do not have those features."174/

We must finally consider the third and implicit purpose of public regulation of telephone and telegraph companies, namely to bring private monopoly under some effective kind of social accountability. The Bell System, as noted, has been successful in manipulating information about costs, investments, revenues, etc., as between the federal and state jurisdictions to frustrate regulation. It has been successful in keeping the personnel of most of the state commissions, and the FCC most of the time, in an acquiescent mood, and in denying them the statutory power, expert professional resources and funds which would be needed for effective regulation. It has been successful in preserving the vertical relationship between Western Electric and the operating entities intact as against the power of the Department of Justice to enforce the antitrust laws, and in fending off the feeble efforts of the FCC to cope with the cost-accounting smoke screen which its ownership of Western Electric provides. It has been successful through a universal, comprehensive and relentless public relations program in convincing most of the personnel in the regulatory commissions, state and federal, and the legislatures, state

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174/ President's Task Force Final Report, Chapter 9, p. 23.

and federal, and state and federal Executive branches, and most of the public most of the time that Bell telephone service is the best possible and that additional regulatory activities would be unnecessary and wasteful of resources. As a consequence of these successes, the Bell System is effectively autonomous as against the regulatory agencies. In this context, the following comment by Dr. Melody is, therefore an understatement:

"As a result, the past acceptance of the inherited philosophy of regulatory responsibility in domestic communications has placed the probability of regulatory alteration of the structure of the industry virtually outside the realm of public policy consideration. Rather, the Bell System, the basic monopoly carrier, has been far and away the dominant force in influencing the evolving character of the industry, the division of communications markets, the communications services provided, the standards of service to be provided, the technology adopted and its rate of introduction, the restraints upon entry, and the great stability of industry structure and institutional relationships."<sup>175/</sup>

The same conclusions are reached by Trebing (see footnote 2, p. 4 Introduction, supra), and by others.<sup>176/</sup>

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<sup>175/</sup> Ibid., p. 7.

<sup>176/</sup> For example, Richard Gabel says, referring to the period of telephone competition before 1907, "Confronted by the vigorous competitive inroads of independent operating companies, the Bell System sought to escape the unaccustomed hardships of competition by acquiring competitors, by limiting their markets and their services, and by espousing the development of governmental regulatory functions. The public service commissions, which ultimately stabilized rates and earnings, adopted the norms of business policy urged by the System and imposed strictures on the 'unintelligent competition.' The advantages thus gained by the Bell System over its remaining competition have been parlayed into a practically unsailable market position fortified by political and legal ramparts." Op. cit., p. 358.

In light of the present miniscule size and importance of the telegraph industry as compared with the Bell System, we have paid little attention in this evaluation to the effectiveness of public regulation of the telegraph industry. Suffice it to say that the regulation of the telegraph industry has been ineffective but less so than in telephone because the telegraph industry under regulation has been much more competitive than telephony. Faced with a decadent technology in Western Union, the FCC in the 1940's was impotent to do anything positive to carry out its statutory mandate to improve industry performance. Caught in the consequences of its own improvident and socially destructive policies from the 19th Century, Western Union could only be passively accommodated to by the FCC when it had the will to discharge its regulatory duties in the 1940's. By the time when Western Union had gone over to microwave technology it encountered the massive power of AT&T contending for the record communications market (powered by the engine of the rate-of-return regulation analyzed by Johnson) and has fought for its corporate survival in the competitive portion of the telecommunications market structure ever since. In that struggle, the FCC favoured AT&T first by denying Western Union a share in the program transmission sub-market, and then by opening up private line services to owner-operated enterprises in the Above 890 decision. Finally, in the Special Telegraph Investigation, the FCC transcended for the first time in the domestic telecommunications area (TAT-4 was an international market decision) the obsolete reliance on the monopoly

firm as the building block of telecommunications structure. In that decision, it advanced to the centre of the stage the proposition that the proper approach of regulatory commissions is to define markets in such a way as to optimize industry performance in them. As of the late 1960's, it appears that, thanks to the competitive impetus of the microwave, computer, satellite technology, the FCC has begun to act in an effective regulatory fashion as regards telegraph.

Referring generally to telephone and telegraph, is it possible to say with absolute certainty that regulation has been totally ineffective? Trebing<sup>177/</sup>, Wilcox<sup>178/</sup>, and Stigler<sup>179/</sup> and others have been concerned with this question. Did not the negotiated rate reduction which the FCC substituted for rate regulation for 31 years actually reduce the rates? Would Bell have reduced them in the absence of bluffing "show cause" orders from the FCC? Posner suggests that

"Regulation may be a ritual in which the participants make a noisy but empty show of adversity in order to reassure their respective constituencies of their zeal, and then compromise at a level not far different from what the free market would have dictated."<sup>180/</sup>

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<sup>177/</sup> Trebing, Harry M., "Government Regulation and Modern Capitalism", Journal of Economic Issues, Vol. 3, March, 1969, pp. 92-3.

<sup>178/</sup> Wilcox, op. cit., p. 572.

<sup>179/</sup> Stigler, George J., and Friedland, Claire, "What Can Regulators Regulate?", Journal of Law and Economics, Vol. 5, October, 1962, pp. 1-16.

<sup>180/</sup> Posner, Richard A., "Natural Monopoly and Its Regulation," Stanford Law Review, Vol. 21, February, 1969, pp. 548-642, 596.



Stigler contends that "...the innumerable regulatory actions are conclusive proof, not of effective regulation, but of the desire to regulate. And if wishes were horses, one would buy stock in a harness factory."<sup>181/</sup> In his view the only way to determine the question is by comparing the behaviour of people subject to the statute with that of people not subject to it.<sup>182/</sup> In the case of telephone and telegraph, this appears to be an impossible task for the whole of the United States was involved in the regulatory scene.

We conclude on this point that any attempt to attain mathematical rigour in proof of absolute inefficiency on the part of regulatory commissions is hopeless and unnecessary: One is caught in the uncertainties as to what would have happened in one phase of the political process if something else had not happened. And the problem may be set aside with the observation that the relevant question is whether one set of policies will yield behavioural results superior in social benefit to another.<sup>183/</sup> In the extensive literature which has developed in the United States in the 1960's on regulatory

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<sup>181/</sup> sup. cit., p. 1.

<sup>182/</sup> He conducted a study of electric rates for utilities which were regulated and those which were not and found no statistically significant effect of regulation.

<sup>183/</sup> Trebing comes to this conclusion too. See "Government Regulation and Modern Capitalism," P. 93.



fields, one finds a broad spectrum of views on just that proposition. At one extreme are to be found the "Chicago school" who doubt the efficacy of regulation, deny that its benefits can be shown to outweigh its costs, and feel that even in "natural monopoly" situations "we might do better to allow natural economic forces to determine business conduct and performance subject only to the constraints of antitrust policy."<sup>184/</sup> This group seems to have an affinity for exploring what some call "indirect controls." It has been seriously suggested that common carrier rights might be auctioned to a private bidder for a period of, say, 20 years, with an upset price named in the bid at which the public could purchase the plant at the end of the period. A variant on this is the proposal that common carrier monopolies be left unregulated and that all except a fair return on the investment be taken from them through taxation. The difficulties in determining a fair rate of return on a comparable-earnings basis, lead to proposals to limit the fair rate of return to the ratio between the earnings per share of the firm's equity stock and market price of the share. Difficulties readily appear in all such proposals. To auction common carrier rights to a monopoly for a 20 year period in times when the technology is evolving so rapidly is to buy a pig in a poke -- from the public's viewpoint. The contract could hardly specify with any precision the range, quality, and quantity of service to be provided in order to protect the public interest

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<sup>184/</sup> Posner, op. cit., p. 549.

in the services. To suppose that taxing away monopoly profits in excess of a fair return is any simpler than determining the fair return under regulation is delusory; and there would be national requirements for service which would have to be imposed in any event. Such proposals are reminiscent of the spate of plans current in the United States in the first two decades of the century for "service-at-cost franchises," under which specific rates would be tied to operating costs, sometimes by sliding scales in a presumed effort to provide an incentive to management efficiency. All such proposals implicitly accept the validity of the monopoly corporation as the instrument of public policy and foreclose the benefits of selective competition in defined markets. And all of them would entail social intervention (i.e. regulation in a new form) to cope with rigidities and abusive price discrimination.

At the other extreme are those who would opt for government operation of monopoly activities, or would prefer a mix of public "yardstick" TVA-type operations with private enterprise under better-designed regulation than the 1907-10 vintage.<sup>185/</sup> Somewhere near the centre of this spectrum will be found Trebing, Melody, and the economists whose position is that the problem is one of designing policy to identify markets which will maximize the degree of competition and to set up the guidelines for industry performance in such markets.

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<sup>185/</sup> Here I would place Horace M. Gray, Wichita Falls, Texas, whose "Passing of the Public Utility Concept" was the earliest critical analysis of the propensity of the regulatory commissions to serve as shields and agents of the monopolistic corporations they were created to regulate. Journal of Land and Public Utility Economics, Vol. 16, 1940.

Finally, the question whether regulation has brought private monopoly under effective social accountability must be answered in part by reference to the success of the Bell System in influencing government agencies to protect its structure (the Consent Decree regarding Western Electric) and its markets (the communications satellite legislation). So long as the corporate servant can control the national government in such obvious ways, its accountability can only be said to be to itself.

(2) What difficulties does regulation of telephone and telegraph in the United States now face? There are two difficulties, the problem of bringing into some sort of social accountability the power of the Bell System, and the problem of the inadequacy of the regulatory tools available.

First as to the problem of enforcing the social accountability of the Bell System, one should be clear as to what is meant. Conceding that Bell service is generally of acceptable quality, it might be better in a number of ways; but one would never know how much better, absent effective accountability. Conceding that telephone rates may have not risen (or indeed may have fallen) much in comparison with other goods and services, they might be more equitable or lower still; but one would never know if this were possible, absent effective accountability. Conceding that telephone service has introduced useful innovations, there might have been more wise innovation policy; but one would never know if this were true, absent effective social accountability. One may not even rely on the democratic process of

decision-making within the corporation as warrant of social accountability because the Bell System like most private corporations operates oligarchically and authoritatively, not democratically. The following data sketch the power dimensions of the monopoly corporation to which the United States has entrusted its telephone industry. According to the President's Task Force the Bell System is the world's largest private enterprise.<sup>186/</sup> It has more net assets than the nation's largest bank, insurance company or industrial corporation. Its net income exceeds that of any other firm. According to this author's calculations a few years ago:

"In any terms, the Bell System is a quasi-political state of a magnitude ranking it with the world's great powers. Bell System revenues in 1959 were larger than the combined national public revenues of Canada and Sweden. They were \$2 billion larger than the combined national public revenues of Denmark, Norway, Sweden and Finland. They were \$2 billion larger than the public revenues of Italy. The stature of Bell power within the United States is equally impressive. To equal Bell revenues in 1959 it would have been necessary to aggregate the total public revenues (including grants in aid) of the 32 poorest states of the Union, or those of the five states with the most public revenues. To equal the total assets of the Bell System at the end of 1959, it would be necessary to add together the total assets of Standard Oil of New Jersey, General Motors, and the United States Steel Corporation. And the same kind of result occurs when one thinks of the Bell System in terms of people. If each of the 728,978 employees of the Bell System at the end of 1962 be assumed to represent a family, it would require the entire family population of the seven smallest mainland states of the Union to equal the Bell population. Or if each of the 2,210,671 shareholders of Bell System stock at the end of 1962 be assumed to represent a family, it would require the entire family population

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<sup>186/</sup> Task Force Common Carrier Report, p. 5.



of the 13 smallest mainland States of the Union to equal that measure of the Bell population. If individual States be compared with the Bell System, Oregon (with 716,000 families) comes closest to equalling the Bell System employee-family population, and Texas (with 2,368,000 families) comes closest to equalling the Bell System stockholder-family population."<sup>187/</sup>

In markets where the regulatory commissions permit competition to a limited degree (e.g. private line services), the practical barriers to effective competition, which flow from the size of the Bell, are formidable. The FCC in the report on the special telegraph investigation noted the greatest problem facing Western Union in that regard:

"AT&T's size constitutes a clear barrier to entry. However, it would be a mistake to assume that this barrier is simply a function of aggregate resources or a potential power for retaliatory action."<sup>188/</sup>

And it identified the dimensions of the barrier: (1) Prior customer contact through the switched network services so that the customer identifies Bell with communications services. (2) Bell's superior capacity to innovate through its vertical ties with Western Electric. (3) Bell's capacity to relate a specific need (which Western Union might fill) with a full range of communications services. (4) Imbalance in resources available for promotion and sales expenditure

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<sup>187/</sup> Smythe, Dallas W., ACA Exhibit 2, Docket No. 14650, Federal Communications Commission, September, 1963, pp. 2-3.

<sup>188/</sup> Sup. cit., p. 208.



in the order of 17 to 1.<sup>189/</sup> (5) The "vast system of interlocking directorates tying AT&T to the major manufacturing, banking and insurance interests in the nation." The FCC noted that the mere existence of such interlocks was a marketing advantage for the Bell, and that 18 directors of AT&T participated in the managements of 18 banks and financial institutions, 16 insurance companies and 58 industrial commercial corporations, with a total of 104 "interlocks." At the same time 13 directors of Western Electric interlocked with managements of 7 banks and financial institutions, 11 insurance companies and 13 industrial commercial corporations. In addition, of course, there were interlocks between the Bell operating companies and the banks, insurance companies, etc.

The problem of creating effective social accountability for the Bell System is immense. No evident attempts have been made in recent years to solve it. One way of beginning to contain the problem of unaccountable power of a corporate complex as omnipresent as AT&T has however been pointed out.<sup>190/</sup> AT&T was a pioneer practitioner

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<sup>189/</sup> "A fourth barrier to Western Union is the imbalance in the resources available for promotions and sales expenditures. For example, in 1963, the direct selling expenses of the Bell System were about \$104 million. No portion of this expense was assigned to sales or advertising in the social market; rather, it was directed entirely at the business market....In 1963, Western Union was able to spend only \$6.5 million for its entire selling and advertising effort -- in both the social and business markets. Thus, Bell mounts a sales effort in the business field some 17 times greater than Western Union's entire expenditure." *Ibid.*, pp. 208-9.

<sup>190/</sup> Gray, H. M., "Control of Public Opinion as a Factor in the Concentration of Economic Power," Midwest Economic Association, April 26, 1963 (mimeo., 13 pp.).

of the art of public relations activities as a prime instrument for the protection and advancement of its power through achieving control of government and public opinion. Its example was imitated by other big corporations, and AT&T as one of the largest components in the Military-Industrial Complex is now not alone in using advertising and all manner of community and political relations as the institutional foundation of its monopoly power. In light of the fact that public relations is not an instrument of economic production, it has been proposed that public relations activities (including institutional advertising) be prohibited as ultra vires the legal privileges of the corporation chartered by the state for economic rather than political purposes.<sup>191/</sup> By definition, the possessor of a monopoly cannot justify public relations activities on the lavish and universal scale practiced by AT&T as being necessary for the production of its monopoly services to the public. As a second approach to the problem, it is suggested that such unproductive expenditures should not be permitted by regulatory commissions to enter into operating expenses and thus be paid for by the consuming public; nor should the monopoly

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<sup>191/</sup> "If we expect to solve the problem, however, we shall need to go beyond these limited remedial measures and challenge the basic right of the corporation to engage in propaganda activities. Whence comes this so-called 'right'? Historically, it derives, I suggest, from an error in constitutional interpretation, - the extension to corporations of those inalienable rights guaranteed to natural persons by the Bill of Rights, specifically the rights of free speech and petition. The ancient law recognized no such 'rights'; corporations are unnatural, artificial institutions created by privilege; their rights, powers and freedoms were limited strictly to their functional economic necessities; actions that transcended these bounds were ultra vires." Ibid., p. 12.

corporation be permitted to charge such costs to operating expenses in computing corporate income taxes. If permitted to continue at all, such costs should be levied on the stockholders.

The second large present problem facing those concerned to regulate and control the telephone industry in the United States is the inadequacy of the tools available to them. As is clear from the analysis of this report the essential tool required is the political will to do the job. Except where there were countervailing industry pressures which could be used as leverage (as in the Above 890 case and the Western Union special telegraph investigation), there has been a marked tendency for the regulatory agencies to be obedient to the Bell System (as in the communications satellite legislation, the denial of interconnection for program transmission and until 1968-69 in regard to CATV development). At the state level, California stands out as the only regulatory commission in recent years to demonstrate its will to regulate the telephone industry. And, as we must remember, in light of the fact that three fourths of the telephone revenue and investment are within state jurisdiction, these occasional exceptions prove the rule of lack of political will to regulate the telephone industry.

Even if the political will were present, there are conceptual weaknesses in the regulatory tools now available to the regulatory commissions. Leaving aside the very promising possibilities available to the commissions in the way of defining markets and subordinating industry performance to market regulation, we turn briefly to the

inadequacies of the conventional model of regulating the monopoly firm. Trebing puts them well.<sup>192/</sup>

The first inadequacy comes from the case-by-case procedure so characteristic of the quasi-judicial style of the commissions. Continuity in policy formulation tends to be lost in the succession of cases, each distinguishable from the others. And avoidance of the possibilities of market re-structuring and externalities is facilitated by the case-by-case method of regulation.

The second inadequacy lies in the belief that "an agency can achieve a goal of stabilization while simultaneously striving to impose social values and judgments upon market decisions". The pressures of the monopoly situation direct attention to overall pricing and rate of return problems and to limits on entry. From this point it is easy for the regulatory agency to become the shield for the regulated monopoly.

The third inadequacy arises from the static assumptions of the regulatory statutes and commissions. The statutes make no effective provision for such crucial areas as planning for industry development, policy for innovation, planning for investment in new plant. The assumption that these matters are management prerogatives has substantially emasculated regulation.

The fourth inadequacy lies in the inherent contradictions in the accepted techniques of regulation:

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<sup>192/</sup> Trebing, Harry M., "Government Regulation and Modern Capitalism", pp. 99-103.



"Consider the three alternatives involved in the rate of return. If the allowed rate of return is deficient (that is, below the opportunity cost of capital), then the results will be a discouragement to the raising of new capital (since such an expansion would dilute the earnings of existing shareholders), poor service, and an inducement to disinvest as far as the regulated activity is concerned. If the rate of return is greater than the cost of capital, then the result will be to induce overinvestment and the provision of service to markets at less than long-run marginal cost in order to camouflage monopoly profits. These effects (commonly included as part of the A-J-K-W syndrome) would clearly have detrimental consequences for performance and equity goals. Finally, if the permissible rate of return equals the opportunity cost of capital, then there is no incentive for efficiency since the firm would operate in a pure cost-plus environment."193/

This dilemma troubled the President's Task Force which put it this way:

"When a firm that is limited to a fixed rate of return operates more efficiently, it cannot always enjoy the savings as larger profits. If it reduces relative cost, the relative rate of return increases. Hence the regulatory agency requires it to lower rates to a level yielding a 'fair return' and the benefits flow directly to consumers. On the other hand, if the firm is not efficient, the assurance of a fair rate of return provides protection rather than penalty."194/

Economists sometimes try to escape the dismal conclusions of such analysis by referring hopefully to the fact that "regulatory lag" permits a carrier the incentive of enjoying profits in excess of the last determined fair rate of return for a period of years before the regulatory commission catches up with it in another rate case. It is a curious justification of rate regulation to argue that it

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193/     Ibid., pp. 101-2.

194/     President's Task Force Common Carrier Report, p. 126.



accomplishes its desired results because of its failure to do so. The Task Force Common Carrier report went on to point out that the same kind of problem arises in regulating service standards and the diversity of communications offerings. Carterfone was an externally-originated event which produced an innovation that in its absence the regulatory commission would not have brought about:

"But a monopolist can make decisions about diversity and can set service standards unilaterally, with the knowledge that an assured residual market is available to accept his choice of services and to help him finance capital investments. The regulatory commission is in a poor position to assume the role of a competitive market, specifying the optimal combination of service, reliability and price. Again the problem is one of missing yardsticks."<sup>195/</sup>

Trebing finds that the problem of pricing services is just as difficult as the rate of return problem:

"Once one turns from the usual simple truths of marginal cost pricing, the problem becomes obscure and confusing. If all prices are set at marginal cost, then deficits will result if genuine economies of scale exist because revenues will not be sufficient to cover unallocable costs. To cover such deficits, the choice must be made between full-cost assignments and value-of-service assessments."<sup>196/</sup>

And he warns that in the quagmire of cost and price data, the search for marginal cost pricing may become a latter-day equivalent of the cost-of-reproduction fantasies in valuation before the Hope case.

We noted in the Introduction that there are developing tendencies in the United States to take advantage of the competitive technology now available to open to competition limited areas of

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<sup>195/</sup> Ibid., pp. 128-9.

<sup>196/</sup> Trebing, sup. cit., p. 102.

the telecommunications market heretofore covered by the monopolistic corporations. This tendency has posed severe conceptual and operational problems to economists who must attempt to blend the theory for what might be called "competitive communications markets" with the theory current for more than half a century for overall rate regulation with averaging of costs over the monopolistic telephone system. On the one hand, there is the "cream-skimming" theory which rationalizes prohibitions on entry to an entity which proposes to enter one of the markets served by the monopolistic carrier. Thus, the President's Task Force Report warns against permitting new entrants to enter the low-cost high-density routes at rates by which the new entrants could divert revenues which help to support service on high-cost-low-density routes. On the other hand, "predatory" pricing by the common carrier could prevent competition in the private line markets. To this problem the Task Force suggests as the solution a "minimum price standard calculated with reference to the 'long-run incremental costs' for the particular service (including the cost of capital and the profits allowed for the incremental capital associated with service) rather than for the system as a whole."<sup>197/</sup>

As the experience of the FCC with phase I-B of the telephone rate case indicates, such theoretical pronouncements are easier stated than implemented. Moreover, the very technological condition which permits the competitive service innovations bespeaks the impossibility of making "long-run incremental cost" studies. For as noted in the

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<sup>197/</sup> President's Task Force Final Report, Chap. 6, p. 18.

Introduction, the most conspicuous characteristic of the mix of computer-micro-wave-satellite technology is flux. Before long-run studies are likely to be meaningful, there must be a stable enough market structure to define a long run. It is a chicken and egg problem. A third reason to be wary of designing economic theory models for the new competitive telecommunications markets is the experience with Marshallian theory when it became imbedded in the fair-value ritual before the state commissions in the half century following Smyth v. Ames. As noted previously, the great bulk of the problem of administering a modicum of competition to the common carrier telecommunications industry in the United States lies in the state jurisdictions where the commissions are under a substantial measure of Bell influence. To adumbrate elaborate theoretical models which may become vehicles for further obfuscation and frustration of regulation in those jurisdictions would be to place economists implicitly in defense of AT&T's monopoly policies where the need is greatest for freedom from them.

Another regulatory problem which presently plagues United States telephone regulation is the matter of developing realistic separations of investment, revenues and costs as between the federal and state jurisdictions. This problem is obviously intimately bound up with the political defense by the Bell System of its hegemony, and is not likely to be settled before the Bell System is brought under effective social accountability. It remains a hall of mirrors.

A final regulatory problem important enough to deserve serious consideration is the matter of cost accounting by the carriers. The present system of collecting information for purposes of rate regulation was inherited with slight modification by the Federal Communications Commission from the Interstate Commerce Commission where it had been designed by accountants familiar with the railroad industry. A beginning step to remedy this difficulty was taken in October, 1969 when the FCC issued a proposed rule making which would require that new tariff proposals explicitly provide the specifications, assumptions, and techniques for collection of supporting statistical information.<sup>198/</sup> It is understood that development of standard procedures for deriving cost and demand estimates is also underway.

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<sup>198/</sup> FCC Docket No. 18703, Adopted October 15, 1969, proposes a new regulation, 1.363 of Chapter I of Title 47 of the Code of Federal Regulations:

"(a) All scientific statistical studies, including but not limited to sample surveys, experiments, and econometric analyses, shall be described in a summary statement, with supplementary details added in appendices so as to give a comprehensive delineation of the plan and procedures undertaken, including, but not limited to, the definition of the sampling frame, the definition of the sampling units, the method of selecting the sample, the characteristics measured or counted, formulas used for statistical estimates, standard errors and test statistics, description of statistical tests; plus all related computations, computer programs, lists of input data and statements of result.

"(b) If the evidence did not arise from a scientific statistical study, then a clear statement should be made regarding all underlying assumptions and judgements, and techniques of collection, estimation and/or testing."



(3) What implications might Canada draw from United States experience in regulating telephone and telegraph? In the Introduction we analyzed the broad parameters which shaped the United States telecommunications policy, examining the relation of the state of the technology to the appropriate organization and public policy for making telecommunications an effective agent of national policy. At the end of the Introduction we summarized the relevant implications for Canada. Our detailed analysis of the history of telephone and telegraph regulation in the United States supports and extends those conclusions. In the interest of clarity, where the conclusions in the Introduction are generally supported we may leave them unduplicated. The emphasis in these remarks is on implications drawn directly from the regulatory experience and these conclusions may be regarded as supplementing those in the Introduction.

(a) Jurisdiction. The illogical, inefficient and crippling effect of the division between state and federal jurisdictions of regulatory authority over common carriers in the United States is evident. The FCC licenses the use of radio frequencies for common carrier use within the state jurisdiction but has no power to regulate their use for telephone and telegraph common carriage. When communications satellites come to be applied to domestic use the federal jurisdiction will be similarly limited. The division of authority between the state and federal authorities has been particularly crucial in regard to the "separations" problem,



embracing the division of capital investment, revenues and expenses between the two jurisdictions. It is recommended that Canada move now to establish total federal jurisdiction over telecommunications service, rates and innovation. The logic is straight-forward.

Whether telecommunications be conducted by sending signals through the radio spectrum by microwave, or by communications satellites, or whether through coaxial cables, wires or wave guides, the technology is the same. And there should be unitary jurisdiction in the federal government. The national interest in survival in a nuclear age supports this undivided jurisdiction. So does the national interest in radio frequency management. So does the proper employment of telecommunications policy in the interest of northern development. The hangover of provincial or state jurisdiction is anachronistic in the late 20th Century.

(b) National development. The propensity of monopoly corporations to favour profitable markets, as revealed in the farm telephone experience of the United States, suggests that national telecommunications policy should provide positively for the telecommunications facilities to permit national development of the under-developed areas of the nation. In principle, some economists in the United States recognize that national telecommunications policy serves or could serve the society viewed as a total system which requires planning by the public sector for the wise employment of telecommunications facilities where their use would not be

attractive to private enterprise. Thus, Trebing says:

"The first factor justifying regulation is the existence of externalities. Externalities are large benefits that accrue to non-users or non-consumers of a service, or heavy costs that are borne by nonproducers, so that the actual prices and costs fail to accurately reflect marginal social gains and marginal social costs. Under these circumstances, private profit maximization will yield suboptimal results.

"It is reasonable to assume that the indirect effects or externalities associated with common carrier communications are far greater than the direct impact of these services. Increased productivity, improved geographic resource mobility, and the current revolution in applying computer technology to research and production, are all attributable in some degree to improved communications. In addition, broad changes in social, cultural and political values may also be considered, at least in part, as an indirect product of improved communications. Indeed, few sectors enjoy the widespread externalities that can be imputed to common carrier communications, and the gap between the value of the service to the immediate user and the indirect benefits and costs to society is substantial."<sup>199/</sup>

In short, the telecommunications system is at the core of the technological infrastructure which makes possible the development of an as yet underdeveloped country such as Canada. It follows that the entities planning development of the Canadian North, and for that matter all of Canada, should be able to take full advantage of the possibility of planning and using telecommunications facilities. It is therefore recommended that such a capability be

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<sup>199/</sup> Trebing, Harry M., "Common Carrier Regulation -- The Silent Crisis," sup. cit., p. 300.

established at a high level and with ample authority and planning resources in the new Canadian telecommunications structure of regulation.

(c) Information for regulation and planning. Currently, telecommunications regulation in the United States is handicapped by its exclusive reliance on obsolete systems of information collection for the purposes of common carrier regulation. Reporting systems for information which is directly relevant to the technology of telecommunications should be developed and should supplement those which have derived from the non-applicable transportation accounting model. Such reporting systems should be instituted in Canada in both the monopolistic and the competitive market segments and for both privately owned and public operating entities. The fundamental nature of this simple recommendation must be emphasized. No planning or regulation can be better than the information which enters into it. And the growing recognition of the sui generis nature of the telecommunications technology which emerged in the second half of this century supports the imperative need for institution of a new and relevant reporting system.

(d) Commission regulation of the monopoly corporation embracing the full range of telecommunications markets, with system-wide averaging of prices and costs, has been demonstrated to be ineffective as the sole or principal means of implementing telecommunications policy in the United States. There is a built-in cause of its failure to accomplish its public purpose. That is

the division of decision-making authority between the private owners of the corporation and the public regulatory authority. The former retain the role of making the important decisions: Planning and innovation policy, investment in facilities, financing, control of public relations (via advertising and all the means of influence), and the determination of tariff and rate matters in effective detail. The public regulatory agencies are confined to a negative, static, passive and retrospective role. As H. M. Gray says:

"The positive functions of management, such as planning, organizing, financing, procurement, technological innovation, marketing and price policy, are beyond the Commission's purview or control, except as in their execution some peripheral violation may occur. Thus power, initiative, and decisions -- all motivated by private interest -- rest in the hands of legalized private monopoly, while public regulation, excluded from the decision-making process and relegated to the sidelines, can only intervene on behalf of the public interest when some vetoable transgression is apparent."<sup>200/</sup>

Under such regulation, most of the time for most of the important decisions, effective power resides in the private owners of the corporation; the regulatory device serves as a shield, falsely assuring the public that its interest is being protected by public regulation. The occasional actions where the public regulatory commissions substantially serve the public interest before the private interest of the regulated corporation arise out of a

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<sup>200/</sup> Gray, H. M., Hearings, sup. cit., pp. 76-88.

combination of occasional rivalry between the monopoly corporation and other private groups (as in the Above 890 case at the FCC), and of the low-probability occurrence of strong and public-spirited commission members. It is recommended that commission regulation of the sort dealt with in this paragraph be not employed further in Canada.

(e) Monopoly segment. It is recommended that the switched public telephone and telegraph networks (apart from the trunk lines which they may share with other services) be a monopoly organization or organizations. Whether the agency to operate them be one or more private entities or crown entities is not critical in Canada. What is critical, as evidenced by the United States experience, is that such monopoly segment be adequately controlled. Its performance should be subject to adequate planning with respect to finances, investment in plant, service standards, innovation policy, design of market and price structure, and public relations. The controlling agency should have its role in such planning and administration clearly defined as being before the fact, rather than after. A structure which would effectively implement such policy intentions is set forth in Chapter II of this report. The problem of rate of return will be inescapable for the monopoly segment where private entities are concerned, and here our conclusion is that we must regard the rate of return as simply what it is, under monopoly conditions: The necessary amount of money to attract the necessary capital to the



enterprise; any attempt to rationalize this sum as "profit" in economic theory is a misleading dead-end. Similarly, tendencies to assimilate the concept of the rate base to any measures of value should be rejected out of hand and for the same reason. For rate-making, the control function in the monopoly segment should be directed to the design of market and price structure so that costs and demands for classes of service are optimally related to each other, using new and appropriate systems of reporting economic information concerning the industry. This will call for quite specific studies of the behaviour of particular markets. Studies of cost functions, economies of scale, demand functions, input-output ratios, etc. will be very relevant and in this respect certain recent economic studies in the United States may well be useful in the Canadian setting.<sup>201/</sup> Studies should be directed to possible incentive plans which would provide profit rewards for improving service and reducing rates.<sup>202/</sup>

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<sup>201/</sup> For example, Trebing, Harry M. and Melody, William H., An Evaluation of Domestic Communication Pricing Practices and Policies, Appendix A in President's Task Force Common Carrier Report.

<sup>202/</sup> The President's Task Force Final Report said on this: "The FCC should explore promising methods of incentive regulation. As the Commission acquires experience in appraising the performance of the regulated firms through long-range studies and shorter term reviews, it may be able to perfect a system of regulation under which the carrier's profit rewards are geared to its accomplishments in reducing costs and improving service. However, such a system would be equitable only if cost and technology trends external to the firm's own performance can be factored out -- a task which requires substantially more technical resources than present budgets permit." pp. 58-9.

An essential policy in the regulation of firms in the monopoly segment should be a prohibition on institutional advertising. There is no valid reason why rate payers should be expected to pay for the efforts to control their attitudes and knowledge through public relations. The monopoly segment firms should be allowed to provide the consumer with clear information regarding specific telecommunications services available to them in order to facilitate more rational choices as consumers; such informative advertising and publicity is a reasonable charge which rate-payers should bear through operating costs of the monopoly firm. But because the borderline between informative and covertly manipulative propaganda is a difficult one to design in written rules, a proposal will be offered in Chapter II by which a practical administrative procedure may implement the intent of this policy through the Critical Agency.

(f) Market segment. The preceding analysis of United States regulatory experience with the potentially competitive markets for telecommunications (i.e. services other than the switched public telephone and telegraph services) confirms the analysis in the Introduction leading to the conclusion that this market, hereinafter called the "market segment," or collection of markets, should be segregated operationally and organizationally from the monopoly segment. The FCC in its 1966 special telegraph investigation report came as close to prescribing this segregation as the hard realities of Bell System power in the United States permitted. In Canada as

in the United States there are at least three reasons why such market segment segregation should be accomplished. In theory there is no argument which prefers a monopoly to a competitive structure when the latter is possible.<sup>203/</sup> The R. and D. work has been done which permits an array of substantial private enterprises to apply the computer-micro-wave-satellite technology to a wide spectrum of markets. There is both a capability and a need for competition in this area. Because these markets are in a state of flux and rapid transformation as the technology accelerates their development, the regulatory tools which are relevant to the monopoly segment with its relatively static markets, are simply useless to regulate this field. In Canada, it is therefore proposed that the control authority for the market segment exercise no control over prices charged for services. However, in order to optimize the competitive state of the market segment, the control authority must be empowered to set terms for entry, to require, on occasion, that entities admissible to the market segment divest ownership of equipment manufacturing affiliates, and to disallow mergers or service contracts between entities in the market segment. The control authority in Canada should maintain a poised position to optimize performance (1) as

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<sup>204/</sup> "Opinions still differ on the optimal degree of competition but there is no empirical or theoretical support for a solution involving no competition at all. On the contrary, there is mounting evidence that neither extraordinary firm size nor monopoly position is necessary or conducive to innovation." President's Task Force Common Carrier report, p. 119.

between markets and entities in the market segment, and (2) as between the market segment and the monopoly segment. The latter objective could be accomplished through direct controls on operating policy in the monopoly segment and by controls on entry and the conditions attached thereto in the market segment.

(g) CATV. Cable TV presents unique and presently indeterminate problems which warrant special treatment in the Canadian regulatory framework. Originally, it appeared to be merely an extension of the over-the-air broadcasting system, and as such it could be treated by the special Canadian agency with that jurisdiction. As the potential of its broadband services became more evident, it appeared that CATV might be the means of providing a wide range of services (from broadcast programs to banking or merchandizing to postal services to facsimile newspapers and even to point-to-point telephone and telegraph services). We recommend that high-level studies be conducted to determine the extent to which CATV development will be encouraged or permitted by national policy to transform banking, press, merchandizing, postal and telephone and telegraph systems of Canada by providing their services through broadband cable and microwave circuits. If the indications available from the United States experience appear in Canada, it would seem probable that broadband cable systems in cities may provide terminal facilities to business establishments who would be customers for private line data and voice-record services conducted via



communications satellites or otherwise through the proposed pipeline or transmission entity. Such a development would fit this aspect of CATV operations efficiently into the "market segment." It is also possible that CATV may provide among other services point-to-point telephone service, especially in new northern communities. To the extent that this possibility appears, CATV operations belong in the "monopoly segment." It is recommended that in the high level studies suggested above, full consideration be given to the desirability in terms of public policy of requiring a separation of ownership and control in CATV as between suppliers of CATV equipment, the operation of the physical facilities of CATV, and the operation of the end-use services provided over CATV.

(h) Competition in telecommunications manufacturing. As indicated above, a major barrier to effective regulation of United States telecommunications common carriers has been the ownership by AT&T of the chief supply firm for the telephone industry, Western Electric, the prices of which have been unregulated. The President's Task Force devoted considerable attention to the advantages and disadvantages of requiring dissolution of such vertical relationship. Powerful arguments were advanced in favour of dissolution:

"The benefits of freer entry could be considerable. The telephone equipment industry with its high degree of automation and requirements for systemic design, once stood apart from the rest of the economy. But today these characteristics describe many industries. With the convergence of communications and computer technology, a number of the most progressive and dynamic manufacturers in American industry -- firms like IBM, ITT, General Electric, Raytheon, and RCA --



have significant potential as innovators and manufacturers of new communications equipment\*. So do the aerospace manufacturers, with their experience in electronics, materials, system design, and other relevant technologies and skills. Only the telecommunications network's exceptional reliability requirements set it apart. In an age where satellites, lasers, computers and other products of space-age industries are becoming increasingly important elements of communications technology, it would be parochial to assume that the carriers' affiliates had a complete monopoly of the ideas and techniques required to fulfill the promise held out to communications users by the course of technological advance. One of the goals of public policy should be further to enlist the aerospace and computer industries in advancing the progress of related industries, and the communications industry is squarely in the natural path of their diversification. In sectors of the communications industry where there is no vertical integration and entry is free, notably satellite communications, manufacturers not affiliated with any carrier have already made impressive contributions to technological progress\*\*. Firms in the electronics industry, such as ITT, have expressed to the FCC their desire to compete with Western Electric, and have called for an end to vertical integration in the industry\*\*\*.

[Footnotes in the original.] \*To mention just three of many examples, IBM manufactures PBX equipment, although only for export markets; General Electric has introduced a modem, designed to be competitive with Western Electric's data set in the private line market; ITT manufactures a vast range of communications equipment in a host of product lines.

\*\*The most notable example is the development by Hughes Aircraft of the synchronous satellite at a time when its feasibility was considered uncertain by others.

\*\*\*When the FCC was considering GT&E's acquisition of Hawaiian Telephone and Northern Ohio Telephone, ITT submitted a letter to the Commission, complaining of the resulting vertical foreclosure of these markets. Letter to the FCC from International Telephone and Telegraph Corporation, Nov. 22, 1967. See also Wall Street Journal, October 19, 1967, p. 2.<sup>205/</sup>

After stating a strong case for dissolution, the Task Force Common Carrier Report gave the pro-AT&T arguments for continuing the vertical relationship, including lead times, systems engineering and cost plus contracting considerations and concluded that it had not been able to resolve the issue. In the final report, the Task Force likewise ducked the dissolution question but said:

"The question of dissolution aside, we favor access by outside suppliers to the widest extent feasible. For the lesson of experience in most industries is that innovation is a function of diversity and competitive pressure. While the high degree of automation and requirements for system design once placed the telephone industry apart from the rest of the economy, these characteristics now typify other industries as well. With the convergence of communications and computer technology and the growth of the aerospace industry, a number of firms have potential as innovators and manufacturers in the field of advanced communications equipment.

"We believe that public policy, and enlightened company policy, should seriously explore every possibility of enlarging opportunities for competitive access to the market for communications equipment, beyond the present level of outside market procurement by the carrier affiliates. Clearly it is in the public interest to make certain that where and when competition can provide such carriers with equipment that meets compatibility, technical and operational standards, and that is less expensive than the equipment of an affiliated manufacturer, the carrier should purchase accordingly. This implies that information on future procurements be made as widely available as is practicable. It implies also that when systems have passed through the development stage, stable components, where feasible, be broken out for procurement in the open market."<sup>206/</sup>

There appear to the present author several compelling reasons why any carrier operating in Canada in the monopoly segment should be

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<sup>206/</sup> President's Task Force Final Report, Chapter 6, pp. 41-2.

forbidden to own control of a manufacturing-supply affiliate. One reason is the ferment in R. and D. which currently makes available a variety of competing industrial suppliers, alluded to above. The case for maintaining the vertical ties does not seem persuasive as against the obvious advantages in price, quality and innovation which the new competitive situation affords. A second reason is that, as is shown by F. M. Westfield, there is an incentive for a profit-maximizing monopoly firm such as a public utility to engage in collusive price-raising with independent suppliers of capital goods, for by doing so the regulated firm actually experiences an increase in profit.<sup>207/</sup> If even firms whose prices are regulated have an inevitable incentive to collude with suppliers who are not affiliated with them, it appears reasonable to assume that such an incentive at least exists when they are affiliated. Accordingly we recommend that no firm engaged in the monopoly segment of telecommunications in Canada be permitted to own or control an affiliate engaged in manufacturing and supplying telecommunications equipment.

The case against vertical affiliation does not seem strong for the market segment. Prices in that segment would not be regulated and the constraint toward capital-intensive investment would not exist. Moreover, it is anticipated that a considerable portion of the market segment will consist of owner-operated telecommunications systems

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<sup>207/</sup> Sup. cit., p. 441. This mathematically rigorous demonstration was a development of the work of Averch and Johnson cited earlier. Westfield's investigation was stimulated by the suspicion of collusion between manufacturers of electrical equipment and their utility customers.

for which a restriction against vertical control of equipment has no clear support. It is recommended that as a reserve power, to be used when necessary to preserve or create competitive conditions in the market segment, the regulatory authority have the discretionary power to forbid vertical integration to entrants into that segment.

(i) R. and D. capability in the control organization.

Throughout the United States experience at the FCC in regulating common carriers (as well as broadcasting) the commission has been seriously handicapped by ignorance of the current state of the art and of possible new innovations, despite the statutory provisions which appeared to have authorized staff work and inquiries into this area. This was most obviously evident from 1959 to 1962 in connection with communications satellites but the difficulty pervades the regulation of common carriers from 1934 on. Of course, innovations and R. and D. are the stuff of which planning for facility development is made, and we have recommended above that such planning authority be conferred on the control body for both the market and monopoly segments of telecommunications in Canada. Absent a capability in-house for R. and D., the effective control by a nation-state of its own future communications system is impossible.

(j) Ombudsman in a critical agency. In the United States experience, as the preceding analysis has shown, regulatory commissions when not acquiescent to industry pressures have been at best quasi-judicial in proceedings to deal with rate and service policy issues.



Even on the very rare occasions when the staff of the agency is permitted or directed to play a genuinely critical role, as a protector of the consumers' interest, there is an inevitable tendency to shape the case with a prudent eye to the fact that the same commission which sits in quasi-judicial judgment on the case will pass on the budget and the promotion possibilities for the staff. In the more common event, the latter considerations preclude the staff from energetically prosecuting the case for what seems to be a mythical constituent -- for rarely does the ultimate consumer have the notice or the information or the interest to organize to make an appearance in regulatory proceedings.

Recent efforts have been made in the United States to create at the federal level an Intergovernmental Utility Consumers' Counsel to protect and prosecute the case of consumers against privately owned public utilities before regulatory commissions.<sup>208/</sup> Included in the Senate hearing record is an instruction from the FCC to its staff in connection with the general telephone rate case instituted in 1965 that "the function of the Common Carrier Bureau Staff is not to be an advocate of a preconceived position, or to take a conventional adversary position." As counsel for the National Telephone Cooperative Association stated:

"Bell is permitted to be an advocate for a preconceived position and to take a conventional adversary position but the staff is not. All-out advocacy on one side is not matched by all-out advocacy on the other side. Instead, the staff -- the consumer protector -- is something

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<sup>208/</sup> See S. 607, the Intergovernmental Utility Consumers' Counsel Act of 1969, and 21 days of hearings thereon before the Subcommittee on Intergovernmental Relations of the Committee on Government operations, United States Senate, 91st Cong., 1st Sess.



in the nature of a middle position, a hybrid position, a referee. What an astonishing spectacle with Bell's battery of lawyers and experts on one side fully committed to fighting for that side but no one to engage in frank advocacy for the interests of millions of consumers on the other side."<sup>209/</sup>

More than 70 industry and governmental groups intervened in the general rate hearing up to 1969, but no one appeared to represent the ultimate consumer who was unrepresented by the FCC staff.

Testifying in support of S. 607 on behalf of the FCC, a friendly commissioner from the FCC said:

"In short, it is important that consumers of utility services be made aware of their right and be represented fully and in the most effective way before regulatory agencies in these complicated proceedings.<sup>1</sup> We believe that S. 607 will further these objectives, and we would therefore welcome the participation in our proceedings of a counsel particularly representing consumer interests.... The function is so complicated, the proceedings are so intricate, our staff is so small, that any assistance we can get in this area through the uncovering of additional information would be of advantage to us and the public."<sup>210/</sup>

In Canada it is recommended that provision be made in the telecommunications control apparatus for a vigorous protector and prosecutor of the interest of the ultimate user of the telecommunications services. On the basis of the United States experience such a function can only be achieved by giving the ombudsman role to an organization which will be independent of the control body which will make the policy decisions affecting the monopoly and market segments.

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<sup>209/</sup> Hearings on S. 607, Part II, pp. 402-3.

<sup>210/</sup> Ibid., Part II, pp. 272, 277.

Such independence should run to appointment and promotion of staff, budget, and policy for such an office. We recommend that such an ombudsman report directly to a Minister on behalf of Parliament.

(k) A final implication for Canada from the United States experience with regulating telephone and telegraph is one which hopefully may never have direct applicability in Canada. It is to beware the hegemony of a monopolistic private corporation which grows too large in the broad range of telecommunications markets to be made effectively socially accountable. Thanks to the development of the satellite-computer-microwave technology which now by embodying a range of large industrial enterprises provides a measure of counter-vailing power, the United States has partly outgrown its 19th Century identification of the private monopoly corporation as the sufficient surrogate for the nation state in telephone and telegraph. The development of national communications policy there is in the direction of using market definition as the primary building block and subordinating corporations to market rules. But it is delayed in developing such a policy by the immense, unaccountable power of the Bell System.



## Chapter II

### Proposals for Canadian Rate and Service Regulation in Light of U.S. Experience

#### (a)

#### Assumptions as to Organization, Jurisdiction, and Policy

The conclusions and implications drawn from the preceding analysis may be set down as assumptions which should govern the organization, jurisdiction and policy for Canadian telecommunications:

(1) The State has the right to do for itself in telecommunications as in other fields, or to adopt procedures for publicly determining the definition of telecommunications markets and the rules by which private or mixed private/public corporations operate within such markets as its surrogates.

(2) The technology of telecommunications is now highly competitive, barring solely the provision of local telephone and exchange network service. Technology therefore no longer takes the form of natural monopolies of all voice or all record communications as it did when monopolistic corporations were desirable agents of telecommunications policy. The technology now favours the national determination of communications markets and the establishment of rules for corporate behaviour in such markets as the essential building blocks for communications policy and structure.

(3) The current state of electronic technology now indicates that in some respects the current and future technology of telecommunications in Canada is amenable to free market operations, in

some respects it will most efficiently be conducted by monopoly organizations, and in some respects it should be kept in government or mixed government/private hands. This is to say that the foundation of telecommunications organization in Canada should now be (a) a functional separation between transmission channels and local facilities (toll centres, exchanges, local loops or grids and terminals), and (b) a deliberate "market" definition (reviewable from time to time), as between the "monopoly" and "free market," or more simply "market" segments. Entities engaged in the monopoly or market segments must be totally independent of each other, i.e., free of all ownership, contractual or other legal constraints between them. Unless this policy be adopted the proposal for monopoly and market segments loses validity. It must be emphasized that the functional and market share definitions which are central to this proposal should not be regarded as immutable over time. At reasonable periods, such as once every ten or fifteen years, it is recommended that they be reviewed and if necessary, in order to achieve the objectives of Canadian telecommunications policy in light of changes in technology and other conditions, changed appropriately. Some sort of monitoring device should be identified in the proposed telecommunications regulatory arrangement which would signal the need for government review of the regulatory plan. One such monitoring device might be the relationship of the Critical Agency to the Canadian telecommunications entity. If the sort of critical-



cooperative relationship envisaged for the Critical Agency and Canadian telecommunications, once established, should break down, it would be a signal of serious trouble warranting review of policy. A second such kind of signal, again from the Critical Agency, would be a considered analytical report from that agency that the applicable rules for the market segment were ineffective and that the condition of competition desired for that segment had been seriously impaired.

(4) The planning and operation of the transmission channels should be vested in a Crown corporation which would also (a) regulate the operations within the "monopoly" and "market" segments of the telecommunications services, (b) be responsible for frequency allocation and management for Canada, (c) possess an R. and D. capability to support the preceding functions, (d) possess a capability for long- and short-range critical studies of an interdisciplinary nature through a Critical agency attached to the Crown corporation but responsible to the Minister.

(5) The sovereign interest of Canada in telecommunications policy requires total and unitary federal jurisdiction over telecommunications services, rates, innovation, organization and operation. The technology requires it because the network of electronic circuitry over which all telecommunications are conducted is an application of radio principles and hence a federal matter constitutionally.

The national interest in survival in a nuclear age requires it. The national interest in radio frequency management requires it. The planning and achievement of development for Canada, and particularly the North, requires it.

(6) The purposes of the national telecommunications policy in Canada are:

- (a) To best serve the national interest in survival.
- (b) To best serve the national interest in development, especially in regard to the North, through integrating and implementing plans for the telecommunications infrastructure with other resource-use and fiscal economic planning.
- (c) To optimize the availability and quality of telecommunications services for the people of Canada's growth and development.
- (d) To realize timely and progressive policy on innovation of new services, systems and equipment for telecommunications and their applications.
- (e) To do the foregoing at reasonable and non-discriminatory prices.

(b)

#### Recommendations Concerning Organization, Jurisdiction, Markets and Regulation

This section will present recommendations and discussion concerning organization, jurisdiction and market structure and

regulation for Canadian telecommunications:

(1) Jurisdiction. It is recommended that the Canadian government establish total and unitary federal jurisdiction over telecommunications service, rates, organization, innovation and operation. The preceding discussion of this recommendation in Chapter I (d) need not be repeated here.

(2) Transmission and Regulatory Entity: "Canadian Telecommunications" (hereafter referred to as the "CT"). It is recommended that there be created a Crown corporation, CT, with the following characteristics:

(a) Organization. CT shall be governed by an appointed chairman and six other directors who together shall comprise the Board. The directors shall hold staggered terms of fairly long duration (seven years?) and shall be eligible for reappointment for a second term only. The directors shall be provided with a generous pension plan upon completion of their terms of office. The chairman shall be responsible for the housekeeping arrangements for CT and for this purpose there shall be an Executive Officer, responsible to the Chairman. Senior staff members shall be appointed with the approval of the Board. The chairman shall hold office at the pleasure of the Government and the Board shall be answerable to the Government for its performance and policy although Board members other than the Chairman should be removable only for cause.

Discussion. The choice of a full Board of government directors as against a mixed board of government directors and directors elected by organizations operating in the monopoly and market segments was carefully weighed. In favour of the latter was the knowledge available from the industry. Against it was the strong possibility that a mixed government/private board would have a built-in conflict of interest which would resolve itself into the "averaging-down" performance which has been reported to be a major handicap in COMSAT, which has such a mixed Board. Also, it is believed that a variety of institutional devices are available for keeping the Board and management of the proposed CT on its toes (the competitive pressures from equipment manufacturers, the competing interests exercised from within the monopoly and market segments, and the quasi-independent Critical Agency). Otherwise the rationale is obvious with the possible exception of the provision for one-term reappointment and pensions for directors. A second term is recommended as permissible because of the probability that directors may develop significant expertise which should be made available for a second term. In light of the fast-moving development of telecommunications technology, however, it seems desirable to set a limit of two terms for any director. The recommendation of a generous pension is derived from regulatory experience in the United States where this was proposed as an offset to pressures on commissioners.<sup>1/</sup>

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<sup>1/</sup> Golub report, p. V-54.

(b) Operating facilities. CT shall acquire, own and operate the nationwide system of trunkline channels, including the intertoll trunks and other telecommunications channels connecting one community with another (together with associated necessary terminal equipment for managing the use of the long-haul circuits) by means of microwave, communications satellites, coaxial cables, wave guides and such other equipment as shall be developed to serve the purposes of trunkline channels. It shall be empowered to plan and built such domestic telecommunications trunk line channels as may from time to time be necessary for the purposes of the Canadian telecommunications system in the service of Canada. It shall be empowered to lease and sell channels and equipment to the entities in the monopoly and market segments and to the Government of Canada, its Provinces and local government agencies. It may establish a subordinate organization for the purpose of interconnecting such Government agencies and providing service between them and may require interconnection with the local loops of the monopoly segment organizations for this purpose. It shall be expected to produce either (a) dividends for the Government or (b) justified determinations to subsidize telecommunications transmission in the interest of national development in lieu wholly or partially of dividends. It shall be authorized to obtain borrowed capital funds and if necessary receive current revenue appropriations from the Government of Canada. It may lease or sell circuits to enterprises in the market segment, some of which may be user-owned. In leasing channels to entities in the monopoly and market segments,



CT shall give due regard to the cost of the facilities leased, and to the desirability through raising or lowering the rentals of providing subsidies either to the monopoly or market segments in the interest of maintaining appropriate levels of incentive and competitive tension between the two segments. It shall be forbidden to conduct a public switched network service for voice or record communications directly to the public. In planning and operating its facilities, CT shall make use of the Frequency Allocation, R. and D. facilities and Critical Agency functions with which it is provided.

Discussion. The Government of Canada took a step in the right direction when it established Telesat Canada and vested in that transmission entity jurisdiction over telecommunications channels by satellite. The present recommendation suggests that this step, although in the right direction, was too short. What is required is a transmission entity which would include in addition to communications satellite circuitry all other long-haul circuitry. In support of it the argument was developed in the Introduction and may be summarized here. Only through government control operationally over long-haul channels can there be effective control of the problem of excess capacity and of allocation of resources. The best development of the presently rapidly growing computer-microwave-satellite technology will be obtained if free entry and free competition are maximized in its application. For that reason we have proposed that a free "market" segment of the telecommunications industry be designed and administered in such a way

that competitive performance would be optimized. The best performance from the switched public telephone and telegraph networks will be obtained if they, in the monopoly segment, are maintained in a state of tension with the market segment. In order to achieve these results it is essential to segregate the entire transmission function from both of those segments and to use it for those purposes. Such market determination and regulation can take place efficiently only if the transmission function is organizationally housed in a Crown corporation which can employ that arm in coordination with exercise of the frequency allocation function of government in the service of a Canadian telecommunications purpose. That purpose invokes a deeper reason for the proposal: The proposition that Canada with its vast geographic spread requires a strong instrument to create the kind of telecommunications system which the next century will require of it. In this connection one recalls the historic reason for using the national power to establish a trans-Canadian railroad, highway system, and broadcasting system. It should be noted that if the Canadian investment parallels the United States experience, we are talking about removing only about 17 percent of the investment from the Canadian telephone industry.<sup>2</sup>/ Removal of the transmission facility as here proposed, would leave the telephone switched public

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<sup>2</sup>/ It will be recalled that long distance transmission represents about 17% of the total cost of the U.S. telephone system, while switching (45%), terminals (23%), and local loops (15%) account for the rest. President's Task Force Staff Report on Technology, p. 7.

network service with all the gear required to operate a telephone network, minus the long-haul pipeline. If the present proposal were adopted, Telesat Canada might well be dissolved and its assets and functions transferred to CT.

This proposal must face the critical question whether the creation of a government-controlled monopoly of long-haul transmission facilities will not be rigid and unresponsive to technological change. The experience with telecommunications is that rigidity and unresponsiveness to technological change and flexibility and responsiveness to it are not necessarily the consequence of public or private ownership. Western Union Telegraph Company for a century was a testimonial to the rigidity and unresponsiveness to technological change of which private monopoly is capable. The answer to the question is to be found in the structural and policy features built into the CT proposal which are expected to produce flexibility and responsiveness to changes in the state of the art. Chief among these are the competitive pressures of equipment manufacturing firms (especially consequent to divorcement of operating telecommunications companies from vertically controlled equipment manufacturing subsidiaries), the competing interests between and within the monopoly and market segments, and the Critical Agency. Whatever remaining risk there be of technological rigidity must be balanced against the fact that Canada may not be wealthy enough to afford the excess transmission capacity which would be the concomitant of private competition in the transmission field. 3/

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3/ We are advised that substantial excess capacity already exists in the transcontinental facilities of the CN/CP TransCanada microwave system, and the TCTS system, to which will be added further excess capacity in Telesat Canada.

As a Crown corporation, CT will have no "rate of return" problem since it will draw its capital as needed through the public borrowing capacity. This in itself is no small advantage, when looking at the whole telecommunications regulatory problem. Further, as an instrument of national development in the service of national planning for the development of the North and all of Canada, it is quite possibly desirable that CT levy part of its costs of operation against the general taxpayer rather than the customers for telecommunications service. For this reason, we have proposed that CT be permitted to report justified subsidies for such purposes in lieu of profits. While CT as a whole is not to be regarded as a "yardstick" operation, it is proposed that it might, if in the judgment of its directors it was desirable, develop a system to serve the Government agencies in Canada. This kind of subsidiary operation would indeed provide a useful yardstick by which the operations in the monopoly and market segments might be appraised and benefit from as a result of reflection of the results of such yardstick operations in regulatory policy. Further discussion is reserved until all of the proposals are presented.

(c) Regulation of the two industry segments. CT shall regulate the operations of the monopoly and market segments, as set forth below. Discussion is deferred at this point.

(d) Radio frequency allocation. The CT shall administer the allocation of the radio frequency spectrum for Canada. It shall determine engineering standards for equipment for all uses of radio



frequencies and electronic equipment used for transmitting and receiving information. In so doing, CT shall take advantage of knowledge from its R. and D. activity, the Critical Agency, its operating experience in long-haul transmission, and its experience in regulating the monopoly and market segments. Discussion. The Introduction made clear the necessity of locating radio frequency allocation policy-making at a high and central location in the administration of telecommunications policy for Canada. The necessity for careful attention to the possibilities of developing appropriate cost/benefit standards or procedures for rationalizing the allocation of radio frequencies emerges from the United States experience. The innovation/obsolescence parameter of radio frequency allocation is a second respect in which the performance of the telecommunications infrastructure of Canada could benefit from sensitive attention to the merits attachable to specific radio frequency allocation decisions.<sup>4/</sup>

(e) R. and D. capability. The CT shall be empowered to conduct such in-house research and development activities in telecommunications as are necessary to enable it to plan wisely its own development of operational long-haul transmission facilities and to conduct its regulatory and planning activities. CT should have future patent and development rights conferred on it arising from all research and development work on telecommunications for the benefit of the Canadian military establishment, Telesat Canada, etc. which is financed directly

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<sup>4/</sup> See Smythe, Dallas W., The Structure and Policy of Electronic Communications, Chapter VII.



or indirectly by the Canadian Government. Discussion. The necessity for an ample provision for an R. and D. capability effectively available to those who must make policy decisions on behalf of the Canadian telecommunications administration was supported in the Introduction. Lacking such capability, the CT would be passively dependent on the advice of engineers and scientists employed by equipment manufacturers and firms in the monopoly and market segments. The potential for an effective R. and D. capability in the telecommunications regulatory structure will be enhanced by the juxtaposition in the same organization of R. and D. and the long-haul transmission operational experience of CT. It should also benefit from intimate association with the capability in radio frequency allocation and the Critical Agency. In order that the public telecommunications policy may benefit optimally from experience in R. and D. by other portions of the Canadian organization, it is necessary explicitly to provide that future development and patent rights arising from all electronics research subsidized directly or indirectly by the Canadian Government be available to the CT as a matter of right.

(f) Telecommunications development planning. The CT shall be empowered to do whatever telecommunications planning is necessary for Canadian development, particularly in the North. It shall be authorized and directed to relate such development planning with other economic planning conducted by the Government of Canada.

Discussion. Referring first to Northern development, one must

recognize that while aircraft patrols, public postal service, and radio and TV broadcasting in the North are useful, they do not provide the substantial infrastructure for community life and industry of all kinds which are the substance of such social development. The possibility and efficiency of Northern development by private and public entities will be a function of the effectiveness with which an all-around communications infrastructure is provided as the core of planning for development. The hopes held out for Telesat Canada's influence in this direction<sup>5/</sup> can only be implemented with assurance by the kind of influence which CT can exercise directly through its own transmission facilities and indirectly through the leverage which it can exercise on the monopoly and market segments. The use of telecommunications planning for all of Canada is exemplified by its possibilities in regard to the North. The CT should weave together its policies and their implementation through the related work on planning, R. and D., frequency allocation, regulation of the monopoly and market segments and operation of the transmission facility, with the benefit of independent critical studies from the Critical Agency.

(g) Accounting and information system reports. The CT shall be empowered to prescribe whatever reporting systems it deems appropriate for collecting accounting, economic and other information about facilities and operations in the telecommunications industry under its jurisdiction. Discussion. The necessity for this requirement has been amply discussed above.

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<sup>5/</sup> White Paper on a Domestic Satellite Communication System for Canada, 28 March, 1968, p. 34.

(h) Emergencies. In emergencies, upon determination by the Government, the CT shall be empowered to seize and operate any or all telecommunications facilities in Canada. Discussion. This, an ultimate right of sovereignty, is clearly a necessary power for a central arm of the Government for telecommunications.

(3) The Critical Agency for Telecommunications. It is recommended that there be created a Critical Agency for Telecommunications (hereafter termed Critical Agency) to serve as a focus of policy-oriented critical studies, and as consumers' counsel or ombudsman in regard to all aspects of the Canadian telecommunications system and its operations. In order to protect the independence of such critical activities, it is recommended that the Critical Agency be responsible directly to the Parliament through the Minister, and therefore free of budgetary, housekeeping, or policy constraints from the CT, or the monopoly or market segments. At the same time, it should be directed to cooperate in long-range studies with the CT organization for frequency allocation, for R & D, and the management and regulatory forces of the CT. As consumers' counsel or ombudsman, the Critical Agency should be empowered to initiate and pursue complaints before the CT, publicize price or service distortions, etc. It must have unrestricted access to information at all levels of the CT and enterprises engaged in the monopoly and market segments. Discussion. The Critical Agency is proposed for two related reasons. The need is evident, as indicated in the Introduction, for long-range studies by engineers, scientists, economists, statisticians, etc. of the applicability of technological developments in terms of component performance and systems design,

of industry studies and long-range technological, cost and demand forecasting. In short a capability for long-range planning for telecommunications is needed, and with a quality and locus in the government structure appropriate to the policy level of its job. It should be the special assignment of the Critical Agency to be responsible for the critical analysis of telecommunications infrastructure development in cooperation with other government agencies concerned with economic planning, and in cooperation with the administration of the CT and its particularly relevant expertise in frequency allocation, R. and D., systems operation, and regulation.

Its organizational detachment from CT is deliberate and well-considered: The best results from such planning studies are likely to come from staff which is not responsible to those whose principal responsibility will be operations and regulation. The joining together in the same Critical Agency of long-range and short-range consumers' counsel or ombudsman functions may seem strange to some. It also is conceived as being in principle the best way of achieving short-range and long-range critical judgments, openly stated, on the respects in which the Canadian telecommunications system could function better than it otherwise would. Accordingly it is proposed that the short-range side of the Critical Agency be equipped with powers and staff adequate to permit it to effectively criticize the CT and the monopoly and market segment performance. As a whole, the Critical Agency offers protection against the rigidity and unresponsiveness to change which large organizations bent to a

particular set of important tasks may tend to exhibit. It will reinforce the competitive forces within and between the monopoly and market segments, and the initiative which is to be expected from a competitive equipment manufacturing industry, in protecting Canada from a static regime in telecommunications.

(4) The Market segment: Definition and regulation. It is recommended that the market segment be defined as the provision of leased line and voice, record, and mixed voice-data telecommunications services where the switched public voice or record network is not required for the service (other than on occasion for local loop and terminal connections). The CT should have the authority to define the extent of the market segment in operational and detailed terms. The purpose of the market segment is to establish and to maintain the maximum possible amount of competition in the rendition of the services included in it. The following basic market rules shall apply in it:

(a) Access to the market segment shall be open to any entity, whether user-owned or otherwise (other than an agency of the Canadian federal government, and other than an entity or affiliate of an entity engaged in switched public voice or record network telecommunications service in Canada) which shall successfully bid for lease of channels in the CT trunkline facility, and be appropriately licensed to use the radio spectrum (if applicable). Bids for the use of the facilities of CT shall be for such periods of time and may be in terms of dollars or



percentages of gross sales by the bidders as shall be determined by CT.

(b) In order to establish and maintain a desirable state of competitive tension between entities engaged in the market segment, and between them and the monopoly segment, and in order to assure service in the public interest to all of Canada, CT:

- 1 - May provide appropriate subsidies through the medium of accepting bids for lease of its channels at less than the maximum bid;

- 2 - May establish as conditions for acceptance of bids from entities in the market segment commitments to render some services which are desirable in the public interest which might otherwise not be rendered.

- 3 - May disallow any merger or service contract between entities in the market segment or between them and entities not engaged in the market segment.

- 4 - May require interconnection of facilities between entities in the market segment and between them and entities in the monopoly segment.

- 5 - May require entities which enter the market segment to divest ownership or affiliation with a telecommunications equipment manufacturing entity.

- 6 - May permit an entity in the market segment to contract with an entity in the monopoly segment to

obtain interconnection with local loops or terminal equipment, or switching, retrieval and data processing services on terms approved by the CT.

(c) There shall be no rate regulation in the market segment nor would there be regulation of service other than as indicated above.

(d) The Combines Investigations Act (R.S.C. 1952, Chapter 314, as amended) shall have full force and effect in the market segment.

(e) The Critical Agency shall conduct periodic studies of the market structure and behaviour of the firms in the market segment in light of the pro-competitive purpose of the segment, and shall publicize the results. Discussion. The argument in support of a segregated market segment has been given in the Introduction and in section (d) of Chapter I and need not be repeated here. We are in a position to enjoy the fruits of competition in the rendition of a host of new applications of telecommunications technology. We do not have in this market area the stability necessary for economic analysis which would justify price regulation. We should define the market segment as broadly as possible (including in it teleprocessing, including remote-access data processing, and store-and-forward switching and hybrid data processing/store-and-forward switching services<sup>6/</sup>). We should direct our regulatory ingenuity in regard to the market segment to using the suggested regulatory controls to establish and maintain competition in the service of the needs for data processing

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<sup>6/</sup> All of which the President's Task Force Final Report recommended be left outside the public utility regulatory ritual. Chap. 6, pp. 29-31.

and other private-line-type service (including broadcast TV and radio programme distribution) in the service of the public interest throughout Canada. For example, if an entity in the market segment proposed to get access to terminal equipment in Vancouver, and link it via United States facilities with terminal equipment in Windsor or Montreal, we should deny it interconnection in the Canadian terminal cities if the Canadian transmission facilities have capacity to provide the service. The fact that this might be more expensive than the United States facilities is, as it has been in rail transportation, one of the costs of having a Canadian identity.

The most obvious problem which regulation in the market segment will face arises from the fact of high- versus low-density traffic patterns. In Canada, as elsewhere, there are areas which will attract competitive enterprises in the market segment for telecommunications. For example, if such an enterprise seeks to enter the market to provide service between points in Ontario and Manitoba and there is no other entity in sight to provide the same service between Vancouver, Regina, and Winnipeg, what should the regulatory authority do? Assuming that there is a need for the service between Vancouver, Regina, and Winnipeg, it is recommended that the regulatory authority establish as a condition in the lease of facilities in the transmission entity to the enterpriser that he should serve the western link as well as the denser eastern link. The operative rules, one supposes, is to design pragmatically the best possible service arrangements in light of the technology, the long-range plans, and the needs of the population.

The same pragmatic rule probably should be applied to the determination whether specific services fall into the monopoly segment or the market segment. For example, suppose that there are local private line (intra-exchange) services which do not require access to any switching system but whose facilities are all mingled with other telephone exchange distribution plant. We recommend that the determination whether such services should be regarded as being in the market or monopoly segments be left to the creative ingenuity of the regulatory authority.

It will be noted that we have proposed that the CT be authorized to require entities proposing to enter the market segment to divest themselves of vertically affiliated manufacturing entities. But we have not recommended a blanket prohibition on such vertical affiliation in the market segment, while with respect to the monopoly segment such vertical affiliation would be prohibited entirely. The different treatment rests on several grounds. Entities eligible to enter the market segment include firms which propose to use the transmission channels as ancillary to their own operations which may be manufacturing operations. We see no reason to deny access to the market segment in principle to such users. Other entities seeking access to the market segment may be in effect contract-carriers for special industrial purposes. It is possible that in order to maintain a competitive situation in the market segment, one of these entities might be required to divorce itself from a manufacturing affiliate in order to permit a rival entity, otherwise similarly situated, to compete in the market segment. For these reasons we recommend a

flexible power to prohibit vertical affiliation in the market segment.

(5) The Monopoly segment: Definition and regulation. It is recommended that the monopoly segment be defined as the provision of switched public voice, record, or mixed voice-record telecommunications service, except for the inter-toll trunk transmission facilities. Enterprises in the monopoly segment shall be treated as common carriers. Fundamental to the proposal is the requirement that the common carriers be denied access to the market segment either directly or indirectly through affiliated organizations, and that the common carriers be denied corporate affiliation with any telecommunications equipment manufacturing organization. The regulatory authority of the CT with respect to the monopoly segment should permit the CT to define in detail the operational extent of the monopoly segment and to approve or disapprove mergers between common carriers when the quality and cost of service will be improved thereby. Apart from this authority over the structure of the common carriers, the CT should have authority to review, approve or disapprove, before the fact common carrier planning with respect to finances, investment in plant, service standards, innovation policy, design of market and price structure, and public relations. Firms in the monopoly segment should be prohibited from engaging in institutional advertising and public relations activities, the purpose or effect of which is to control public opinion and government actions. They should be permitted to conduct advertising which provides consumers with clear information respecting specific services which aids consumers in making more rational choices. The burden of proof



for permitting related publicity or promotion activities to be engaged in and the costs thereof charged to operating expenses should rest on the monopoly firm. This burden of proof could be discharged by proving to the Critical Agency that such promotional practices would produce a more equitable and improved rate structure than would strictly informational advertising linked with actual improvements in service and/or changed rates.

The CT should be given the usual powers to consider and determine the reasonableness of rates, tariffs, practices, classifications or monopoly firm regulations, together with the power to require filing of tariffs, regulations, etc., and to suspend the same pending investigation. It should be directed to determine the general level of rates with a view to returning a fair return on the depreciated original cost of plant invested by the common carrier. It should be directed to tie the rate of return calculations to productivity indexes for the common carriers and to permit the carriers' stockholders to receive the benefits of earned increases in net earnings, while passing forward to rate payers whatever portion of net earnings accrues from external factors such as population increase, etc.

Discussion. The rationale of regulation of the monopoly segment was described in section (d) of Chapter I and need not be repeated here. It is a policy of confining direct regulation of facilities, rates, service and other operational aspects of common carriers to the limits which the current technology makes appropriate for common carrier regulation. And it is a policy of making the best possible use of

the experience with regulation of common carriers in the United States as far as concerns the tools of regulation.

General Discussion. Possible problems and disadvantages in the preceding proposals might be reviewed as they were presented by Dr. Harry Trebing at the Canadian Economic Association meetings in Winnipeg in June, 1970.

(1) Is segmentation of markets compatible with systemic optimization and integrity? The answer appears an unqualified affirmative. The experience with TAT-4, the Western Union Special Telegraph Investigation previously cited here supports the proposals. Trebing offers further illustrations:

"For example, TAT 4, proportional fill, ground station ownership and the 30 Circuits case, are evidence of market-share policy in international communications. Domestically, the integration of TWX-Telex and PMS have involved an allocation of markets by service and carrier. FCC policy has also distinguished between telephone-CATV functions to divide areas of responsibility, and the tentative decision in the computer inquiry is further testimony to such efforts, as is the Justice Department's AT&T consent decree."<sup>7</sup>/

(2) Segmentation does not remove the need for guidelines for pricing, rate of return and frequency allocation. The structural features of the proposal made in this report do not themselves remove the need for guidelines for frequency allocation, nor should they be expected to do so. They do, however, reduce the scope of the industrial activities as to which pricing and rate of return guidelines will be

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<sup>7</sup>/ Trebing, Harry M., "The Growth-Technology Challenge in Communications and Alternative Public Policy Response," May, 1970, p. 13.

required very substantially, i.e. to the monopoly segment alone and this should be regarded as an improvement over present practice. Moreover, the problem of rate of return for the long-haul transmission facilities is eliminated: Another advantage.

(3) The possibility of extortion by corporate power remains. Under Canadian conditions, the present proposal would reduce the only substantial corporate power (Bell of Canada) appreciably. With acceptance of the protective features built into the present proposal, that corporate power would not present grave dangers.

(4) Would segmentation increase over-all uncertainty and therefore the cost of capital to the whole industry and to the consumer? One cannot eat one's cake and have it too. The competitive tendencies in telecommunications technology have made substantial inroads on the obsolete corporate monopolies of telecommunications services in the United States and Canada. They are welcomed in principle by impressive authorities, as the Introduction and Chapter I of this report have indicated. If competition results in increased cost of capital, as compared with monopoly, then this may be part of the price paid for the benefits of a more competitive order. At the same time, we have noted that the Bell System in the United States has based its rate of return pleadings in recent years on the contention that it is in a growth industry and that the cost of capital for competitive industry is therefore a fair criterion for its rate of return. It can be seriously argued that the rate of return limits on communications monopoly corporations have always exceeded the necessary cost of capital to them. It seems then that this criticism

may be set aside as partly undeterminable, partly unfounded in fact, and partly rebutted by the advantages accruing to a more competitive order.

(5) Is a policy of segmentation and market shares an essentially static concept, unsuitable to a dynamic society? As was emphasized in the statement of assumptions with which this chapter began, the present functional and market-shares proposal is not intended to be immutable or static. We have proposed that its performance be reviewed after ten or fifteen years and new policy determined at that time, if necessary. We have proposed that built-in monitoring devices be used to signal either that the arrangement is reasonably dynamic in operation or that it is not. As compared with this kind of flexibility, what alternatives are available which are less static? Can it be seriously contended that the monopoly model was other than static and resistant to major technological innovation? The Bell System resistance to the "Above 890" changes, the MCI and Carterfone changes, and its attempt to divert and monopolize the communications satellites to protect its domestic monopoly is in point. So is a century of Western Union technological stagnation. The Canadian duopolistic situation is a matter which falls outside the terms of reference of this report. In implementing the present proposal it is obviously possible for the duopoly to be continued in the monopoly segment. One might reasonably look to inter-segment competition and rivalry to ensure against technological stasis. One may also look to the combined operational and regulatory activities of the CT,

backed up by the Critical Agency and a competitive equipment manufacturing industry to ensure against technological stasis. As compared with this prospect the possibilities of capital-intensive bias, and of tacit collusion between the duopolists in the present duopoly situation, would seem a priori to be more lethargic.

(6) The last point raised by Trebing is one of political feasibility. Segmentation would imply, he notes, divorcement of vertical affiliates. If political resistance seriously modified the proposed market segmentation, he suggests, "it is probable that fragmentary compartmentalization would be the result rather than the implementation of the original program." The present author does not attempt to evaluate the political feasibility of the present proposal. We do suggest that if the prohibition on vertical affiliates in the monopoly segment is not adopted, the conception of the monopoly segment and the market segment should not be dropped. Supported by the R. and D. work of non-monopoly segment equipment manufacturing enterprises, the market segment would probably be viable, provided it remained free of operations affiliated with the monopoly segment, even if the monopoly segment retained vertical equipment affiliates. But if the prohibition on entities in the monopoly segment engaging in operations in the market segment or being affiliated with entities in the market segment is not adopted, the conception of the monopoly segment and market segment should be dropped. Even if both the monopoly and market segments were dropped as unfeasible, the remainder of the proposal would still be viable,



to wit, the national jurisdictional recommendation, the CT as a transmission and regulatory entity, and the Critical Agency.

It is anticipated that a number of advantages would accrue to Canada from implementing the preceding proposal. At the most basic level, central direction and control could be exercised over the allocation of resources to telecommunications, and over the planning of telecommunications in the service of the development of Canadian resources for the benefit of Canada. This would flow from the ownership of the trunkline circuits by a Crown Corporation, taken together with the exercise of the power of frequency allocation, the benefits of an in-house capability in R. and D., and the function of positively planning for Northern development and the development of the Canadian system as a whole. At another level, that of business in Canada, there would be the release of initiative residing in Canadian business to develop without government regulation of rates or service the vast but presently inchoate potential of telecommunications technology as applied to data processing and computers. Regulation of the monopoly segment would be simplified by being reduced from its present conglomerate market scope to that of switched network services only. It would also be made more effective by adoption of regulatory devices more sharply attuned to the objectives of rate and service regulation than the old regulatory procedures relying on system-wide rate and cost averaging over the wide gamut of markets into which the old-style monopoly corporation spread its

activities. The addition of the Critical Agency with both its long-range planning and ombudsman functions would introduce a long-missing element of representation of both the relevant skills and interests of the whole community in the planning and operation of the national telecommunications system. In short, the institutional re-arrangements here proposed would substantially eliminate the long historical lag between the potential of our electronic technology and our national institutions for making use of it.

The dislocations involved in any such institutional up-dating will be disturbing to some. It would require that major private corporations (e.g. Bell of Canada, British Columbia Telephone) and public corporations (the provincial government corporations in the prairie provinces) and provincially chartered private corporations (in the Maritimes) resolve themselves into separate entities in order to operate in both the market and monopoly segments. Moreover, in order to avoid distortions in the market segments, entities in the monopoly segment would have to divorce themselves from manufacturing affiliates and let competitive forces govern their future relations.

The argument on behalf of the proposal rests ultimately on the hard technological fact that telecommunications technology is now both unified in its planning significance (and thereby of the highest importance to the sovereign state), and diversified in its operational applications. An appropriate form of organization for it therefore requires a combination of national unification (through the CT organization) and of diversification of industry activities into a common carrier segment, and a competitive market segment. The proposal

is thus pragmatically based. It avoids completely the obsolete United States assumption that through the passive, negative and token regulation of private corporations operating monopolies, the theoretical advantages of competition can be realized.

## APPENDIX A

5. The question of government ownership. Public ownership was rejected (albeit in a somewhat different context) in 1962, when Congress passed the Satellite Act, and the decision may well be regarded as a definitive indication of preferred Congressional policy. Nonetheless, we have re-examined the question.

Public ownership might be established by creating a federally owned corporation for international communications -- an International Communications Authority (ICA), which would purchase the assets of COMSAT and the pertinent equities of the other international carriers, under appropriate safeguards to assure necessary independence, operating efficiency, continuity and pertinence of research and development programs, reflection of the national interest in international communications decisions, and responsiveness to national security and foreign policy objectives. On behalf of such a proposal, one could argue that experience since 1962 indicates that international, inter-government involvement in communications satellite programs will loom quite large -- particularly in spectrum and orbital management, and in technical standardization and coordination. It seems most unlikely that any major decision on satellite design, implementation, or control will be possible without close government participation and coordination -- a situation quite unlike that in other areas of communications, such as domestic microwave relay facilities. The synchronous technology now in use by INTELSAT underscores the importance of close coordination among governments, since specialized communication satellite systems serving various small areas of the globe may well prove feasible. Prospects are also increasingly apparent for extensive international, inter-governmental cooperation with respect to the use of satellites in areas other than communications. Meteorological, navigational aid, and earth-resource satellites are among the leading candidates. Finally, our national policies in international communications are not based solely on the goal of providing U.S. users with reliable, low-cost and improved service. A variety of foreign policy and national security goals also enter the picture. For example, the 1962 Act expresses concern for the interest of developing countries.

A separate argument for government ownership stresses the extent of the Federal Government's involvement in space. It has been, and will probably continue to be, the nation's principal investor in space, both in terms of research and development as well as operational programs. Without the vast Federal research and development and manufacturing programs, and the government's facilities for launch vehicles, it is unlikely that commercial communication satellites would have proved viable. Since the U.S. taxpayer has contributed so substantially to

the development of communication satellites and will continue to do so, some believe that government ownership is the best way to ensure that the entire nation benefits. Whatever the force of this argument, it is not a new one; it was fully argued to the Congress in 1962.

Proponents of public ownership point out that the case for a single entity relies heavily on (a) the ability of the government to regulate its activities and provide, through the enabling legislation and subsequent regulatory determinations, a framework of adequate incentives for the single entity to make progressive, efficient and socially optimal decisions; and (b) a substantially improved governmental capability, both in the regulatory agency and Executive Branch, as discussed earlier.

It is argued that a substantially increased governmental capability may not be forthcoming. It is also argued that problems of incentives associated with public ownership would not be greater than in the case of a regulated private entity, and that concerns associated with direct government involvement in industrial operations have been faced and disposed elsewhere, e.g., in the cases of the Tennessee Valley Authority and the Port of New York Authority. Still another view is that private enterprise would be more efficient and would ensure against untoward political interference.

It is impossible to demonstrate conclusively whether a scheme of public ownership could be devised that would neutralize the danger of political interference and ensure efficient operations. But we are fairly entitled to conclude that, until a more convincing case for public ownership of our international communications facilities has been made, private enterprise should continue to serve the nation in this sector.

The critical role of the international communications industry in the achievement of our national goals justifies prompt remedial action with respect to the deficiencies in its structure that our study has revealed. The pace of technological advance is rapid in the international communications industry. The time for further reform of its structure is now, when the problems and opportunities are clear. That such reforms will undoubtedly require several years to implement lends added urgency to the case of prompt action.

President's Task Force on Communications Staff Report, Organization of the United States International Communications Industry, pp. 143-147.



## APPENDIX B

### VII. SUMMARY OF CONCLUSIONS AND RECOMMENDATIONS

Clear policy objectives and a new approach to spectrum management should be adopted --

- A. AS A BASIC GUIDELINE, WE SHOULD SEEK THAT COMBINATION OF SPECTRUM USES WHICH OFFER MAXIMUM SOCIAL AND ECONOMIC CONTRIBUTION TO THE NATIONAL WELFARE AND SECURITY.

Accordingly, the following principles emerge:

1. We should seek the continuing substitution of higher-valued spectrum uses for lower-valued uses and the addition of uses whose net effect is to increase overall benefits, with due consideration of all imbedded capital investments.
2. Unused spectrum resources should be employed to meet any legitimate need provided that this does not cause excessive interference to existing uses, conforms with established standards and international agreements, and does not interfere with established plans for higher-valued uses.
3. Comprehensive coordination of all spectrum use is required, under a continuing framework of public administration.

- B. GREATER CONSIDERATION OF ECONOMIC FACTORS IS NECESSARY

1. An improved schedule of fees for spectrum licenses should be developed, which reflects the extent of spectrum use (e.g., bandwidth, power, service area, time availability) and the level of demand for spectrum rights. And intensive studies should be conducted of other means to account for economic value, including adjustable license fees, spectrum leasing, and taxation.
2. License privileges should clearly be stated for each class of spectrum use (e.g., land mobile, radio relay, etc.), in terms of interference probability, channel loading, service quality, and other appropriate factors.

3. Administrative procedures should be modified to permit greater transferability of licenses among legitimate spectrum users within broad service classifications, subject to all relevant conditions of the initial license, including the requirement that all exchanges or transfers be registered and approved by the spectrum management authority.
4. Procedures should be developed whereby a prospective spectrum user may obtain a license even though this would represent a potential source of harmful interference to an established clear channel user, provided that prior arrangements are concluded between all affected parties, including adequate compensation or indemnification by the new user.

C. GREATER ATTENTION TO INDIVIDUAL SPECTRUM USES SHOULD BE ACHIEVED THROUGH "SPECTRUM ENGINEERING" AND RELATED TECHNICAL CONSIDERATIONS

1. A more flexible approach to spectrum management should be adopted, under which the National Table of Frequency Allocations is transformed over time from a fixed allocation by user category to a basic planning guide by service classification.
2. A comprehensive spectrum engineering capability for individualized planning and engineering of spectrum uses should be developed, charged with continuing improvement in technical design and operating standards for all transmitting and receiving equipment and other devices that materially affect spectrum use.

D. ENHANCED MANAGEMENT CAPABILITIES -- AND A RESTRUCTURING OF RESPONSIBILITY AND AUTHORITY -- ARE REQUIRED

1. Legislation should be considered which would vest in an Executive Branch agency overall responsibility for ensuring efficient spectrum use for all government and non-government uses; this legislation should contain appropriate guidance as to coordination required between the spectrum manager and the FCC in areas of mutual interest and concern.

# TELECOMMISSION



**Study 1(f)**

**Relevance of Regulatory Experience in  
Countries other than Canada**

*The Department of Communications*



TELECOMMISSION

STUDY 1(f)

RELEVANCE OF REGULATORY EXPERIENCE

IN COUNTRIES OTHER THAN CANADA



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This Report was prepared for the Department of Communications by a project team made up of representatives from various organizations and does not necessarily represent the views of the Department or of the federal Government, and no commitment for future action should be inferred from the recommendations of the participants.

This Report is to be considered as a background working paper and no effort has been made to edit it for uniformity of terminology with other studies.



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## CHAPTER 1

### INTRODUCTION

#### PURPOSE OF THE STUDY

In September, 1969, the Minister of Communications announced an extensive study program to examine Canada's telecommunications industry. The "Telecommission" has organized some fifty studies to explore many of the legal, economic, technological and environmental aspects of telecommunications in Canada.

This study is one of the several included in Section I, Legal Considerations. The primary purpose of Study 1(f) is to gather and examine information concerning the regulatory experience of other countries and identify and explore those aspects that might have relevance for Canada in the future development of its regulatory concepts and legislation.

#### TERMS OF REFERENCE

The survey of other countries' experience with the regulation of telecommunications sought information in the following areas:

##### 1. The Provision of Telecommunication Services

- the organizations that provide public telecommunication services.
- the ownership of the organizations.

- the major telecommunication services that they provide to users; both the services provided to the public in general and the services provided, on a private basis, to special users.
- the relative importance of different organizations as indicated by gross revenues, market shares, etc.
- the rate of growth of the major telecommunication services in the past decade and the projected growth for the next 5-10 years.

2. Jurisdiction

- the powers of different levels of government with respect to the regulation or control of telecommunications.
- an outline of relevant legislation.

3. The Regulatory Situation

- the organization(s) responsible for the control or regulation of telecommunications.

In situations where independent bodies or government agencies regulate autonomous telecommunication entities providing public services.

- the scope of the regulation, in terms of authority over rates, overall economic performance, conditions of service, expansion of facilities, etc.
- the nature of the regulatory body's accountability to the government.
- an outline of relevant legislation.

In situations where government agencies own, operate and control the telecommunications system:

- the manner in which rates are set, conditions of service are established, satisfactory economic performance is determined, etc.
- the constraints under which the agency operates to achieve the functional equivalents of regulation such as rate control, adequate provision of services, etc.
- the nature of the agency's accountability to the government.
- an outline of relevant legislation.

#### 4. The Regulatory Approach

- a general description of the philosophy, scope, and intensity of regulation or control as it is exercised by the responsible organization(s).

- an appraisal of the effectiveness of the regulation or control as it is reflected by such parameters as the technological development of the system; the relative level of rates; the opinions of regulated companies and/or users of the telecommunications system.

#### 5. Special Considerations

- the nature and extent of the management of the radio-frequency spectrum and the body responsible for the function.
- the nature and extent of the regulation of public broadcasting services, in terms of program content, technical standards, etc., and the body responsible for the function.
- the interrelationship, if any, between the regulation and control of public telecommunication services and public broadcasting services.
- the role of government in establishing special telecommunication facilities such as those that support aviation, marine communications, etc.
- an outline of relevant legislation.

#### 6. Contemporary Issues

- a review of forward plans for changes in the regulation or control of telecommunications.

- the reason for planned changes and the possible impact upon the telecommunication common carriers and their users.
- a summary of any current issues, related to the regulation or control of telecommunications, for which solutions are being sought.

#### SCOPE OF THE STUDY

It was necessary, to keep the study within manageable proportions, to restrict the survey to a relatively small group of countries. The selection of the countries was made on a somewhat random basis. However, there was an effort to obtain a measure of geographic representation and to select countries from which it was felt information would be available. The United States was excluded from this study since it is the subject of a separate Telecommission Study. The information was primarily obtained through the kind co-operation of the Department of External Affairs.

Not all the countries, which were approached, were able to provide the information requested. However, responses were received from a total of 12 countries. They were:

Australia	Mexico
Brazil	Spain
France	Sweden
India	Switzerland
Japan	United Kingdom
Kenya	Germany



There was some variety in the amount of detail which was received from different countries. Furthermore, in some instances, the project team members were able to supplement the information from their own experience and research. Therefore, there is a varying degree of information presented in this study for different countries. This does not reflect any particular emphasis; it is simply proportional to the amount of input data available for the respective countries.

#### THE PROJECT TEAM

The members of the project team who participated in this study are:

Mr. J. Dubé	Canadian National Telecommunications
Mr. D.W. Fulford	Department of External Affairs
Mr. G.E. Graham	Trans-Canada Telephone System
Mr. K.T. Hepburn	Department of Communications
Mr. J. Hylton	Canadian Radio Television Commission
Mr. Spencer Moore	Canadian Broadcasting Corporation
Mr. F.G. Nixon	Department of Communications
Mr. D.S. Robertson	Department of Communications

## ORGANIZATION OF THE STUDY

This introductory chapter has stated the purpose and scope of the study and has outlined the information that was sought from the various countries. The next chapter presents the analysis of the Project Team with respect to those elements in the information received which might have particular interest and relevance for Canada. In Chapters 3 to 13 inclusive, the information concerning the respective countries is presented and organized to reflect the major topic headings used in the terms of reference. A separate chapter has been devoted to each country to permit future updating of the report to preserve its usefulness as a reference document.



## CHAPTER 2

### Analysis of Relevance

#### Introduction

The analysis of the information gathered in this study and the search for elements of particular relevance for the Canadian situation, posed some difficulties for the Project Team. It was generally agreed that an ideal analysis would focus on those characteristics that would be desirable for Canada's telecommunication system and would then seek to identify the elements in other countries' regulatory environments that might contribute to the development of these characteristics.

This approach, however, is beyond the scope of the study. First of all, the data base is not comprehensive enough to provide for such an analysis. Secondly, the environment for telecommunications is so complex that there are any number of variables that could affect its development and performance. Without a rigorous research design, it would be most unwise to draw causal relationships between variables in the regulatory environment and characteristics of the the telecommunication system.

Given these limitations, the Project Team felt it would nevertheless be valuable to analyse the information it had gathered with a view to pointing out the variations in regulatory concepts that exist between Canada and other countries and, for that matter, the differences that exist between the various countries themselves.

Within these broad confines the Team primarily considered points relating to jurisdiction, regulatory authority and relationships and the approaches to the regulation of telecommunications. Particular aspects of the general subject area, such as management of the frequency spectrum, the nature of the regulation of broadcasting programming or content, and competition with respect to the provision of telecommunication services also attracted the interest and attention of the Project Team.

### Jurisdiction

It is clear from the information gathered that, in the countries studied, it is primarily the national or central government that has jurisdiction over the telecommunication carriers. In this regard there is a difference with respect to the North American experience where state or provincial authorities have jurisdiction over carriers within their own borders. It might be noted, however, that there is no divergence with respect to jurisdiction over matters relating to Broadcasting and to the radio frequency spectrum. In Canada, as in the countries studied, these matters are under the jurisdiction of the national government.

The countries that would be most interesting with respect to jurisdiction are those with a political structure which involves a union or federation of States. Therefore, particular note might be taken of the jurisdictional situation in Switzerland, Germany, Mexico, India and Brazil.<sup>1</sup> In Switzerland authority over telecommunications rests with the federal government. Similarly, in Mexico,

<sup>1</sup> It should be noted that, in this context, the United States is also of particular interest. However, as indicated on Page 5, the U.S. is the subject of a special study and is not discussed here. See Telecommission Study 1(e), A Study of the Relevance to Canada of American Legislative and Regulatory Experience.



India and Germany, telecommunications is the concern of the central government. In Brazil, the state and municipal governments have a role to play; however, they appear to act within the framework of national plans and codes.

An interesting exception to the generalization concerning the jurisdiction of national governments is Kenya, where control over telecommunications is vested in a supranational body, the East African Community, which embraces Kenya, Tanzania, and Uganda.

It is apparent, therefore, that the countries in this study have found it desirable to place telecommunications under one central jurisdiction. Since there are basic constitutional differences between Canada and these countries on this point, it appears unnecessary to search for any particular relevancy beyond noting the fact that these other countries have not established a divided jurisdiction over the provision of telecommunications services.

#### Regulatory Authorities and Relationships

A basic concept that is apparent in all the countries studied is that the importance of telecommunications to the public interest requires that those who provide telecommunication services be accountable to some public authority. The "public authority" is often comprised of various institutional structures; however, in general, the ultimate regulatory authority is a minister with particular responsibilities for telecommunications, together with his colleagues who form the government, and the legislative body of the country.

The nature of the accountability varies considerably depending upon the relationship of the carrier(s) to the government and responsibilities of the different governmental bodies. For example, in those countries where the carrier is a government department, the accountability is relatively comprehensive and direct. On the other hand, where the carrier(s) are government or private corporations, there is often considerable autonomy.

In the countries studied, there are no authorities for the regulation of the telecommunication carriers similar to the regulatory commissions which are familiar in Canada and the United States. The accountability of the carrier(s) to the government and to the legislature is generally more direct than it is in many of the Canadian jurisdictions.

#### Approaches to Regulation

While there are no parallel regulatory structures from which to seek relevant concepts for the type of regulatory commissions found in Canada, there is certainly an area of interest with respect to the variations that exist in the organizations providing telecommunications services and the manner in which they are subject to regulation.

There appear to be three major organizational forms. These are:

1. Government Departments;
2. State-owned Corporations;
3. Private companies operating under a licence or concession.

## Government Departments

In those countries where the telecommunications services are provided by government departments, such as India, France, Switzerland and Australia, the relationship between the department and the government and the regulatory approach requires little elaboration. The economic and financial aspects of the communication departments are generally dealt with by the government and the legislature, as are the budgets of other government departments. In these countries the role of the government in the provision and regulation of telecommunication services is quite direct. In Australia government policy enters into questions of rate setting and proposals to vary rates and charges must be approved by parliament. Similarly, in India, changes in rates are dealt with as part of the government's annual budget.

There is, however, some danger in making generalizations as to the degree of direct government control in the case of government departments. In Switzerland, for example, it is indicated that the PTT is given a considerable autonomy.

## State-Owned Telecommunication Carriers

In several countries the telecommunication services are provided primarily by Corporations that are either totally or partially owned by the state. In Sweden the Telecommunications Administration is a state-owned and operated agency; in Great Britain the Post Office has recently been created a Crown Corporation; in Japan the NTT is owned by the government; and, in Brazil the government is the major shareholder in the Brazilian Telecommunications Corporation.

In these countries the government involvement in the operation of the corporation is not as direct as in the case of government departments. In Sweden, for example, the Administration has considerable autonomy and it is operated as a commercial enterprise, and in Great Britain, the Post Office has a responsibility to obtain revenues to cover all costs plus the operating expenses. However, in Japan, the principal parts of the rates and the terms and conditions of service are fixed by law and others are fixed by the NTT with the authorization of the Minister.

Regardless of the varying degrees of autonomy granted to the state-owned carriers the government generally has the final authority on matters relating to operating budgets and rates for service. However, in the United Kingdom, rates appear to be under the control of the Post Office and overall increases must be approved by a Post Office Users Council. There is a right of appeal to the Minister of Posts and Telecommunications in cases of alleged discriminations.

#### Private Corporations

The existence of private corporations (including city or municipal systems) is characteristic of several of the countries. However, there is usually a government organization or a state-owned corporation which also provides telecommunications services.



In Mexico, for example, all land telephone service is provided by Telefonos de Mexico which is a private corporation that holds a government concession from the federal Ministry of Communications and Transport. This Ministry is responsible for the control and regulation of communications and the Directorate General of Tariffs must approve rate changes by a concessionaire. It might be noted that another Directorate General, within the same Ministry, also provides certain telecommunication services.

Spain also provides an interesting situation. There are three major telecommunication carriers: the DGCT, which is in a government department and two other concessionaires. However, these concessionaires are not strictly private corporations. One (ENTEL) is owned by a state agency, and the other (CTNE) is 41% state-owned. The government control of the latter company is established formally in a contract with the state; however, it appears that the operation of the company has almost become a direct business of government.

In the United Kingdom the Post Office is also authorized to licence other operators. The States of Guernsey and Jersey and the city of Kingston-upon-Hull hold special licences. Similarly, in Australia some semi-government and commercial bodies provide private telecommunications services under licences. In Switzerland the legislation does not forbid private undertakings in the field of telecommunications, although in general, no such private ventures exist.

It might be noted that, in Brazil where there used to be various private companies, the country has moved to a nationally-owned system which provides the supra-structure for telecommunications. Brazil has also nationalized the major telephone company in the country.



There do not appear to be any specific lessons for Canada to be derived from the above information. There are presently in Canada most of the examples of these organizational forms. There are a variety of Crown Corporations. COTC is a federal Crown Corporation offering international telecommunications services, Sask Tel and Alberta Government Telephones are Crown Corporations of their respective provincial governments. In Telesat, Canada has a corporation which is to be partially owned by the federal government, other carriers and public investors. Several of Canada's telephone companies are private, investor-owned corporations operating under franchise from the federal or provincial governments. Finally, at the municipal level there are systems such as Edmonton Telephones.

Some interesting points that might be of special interest to draw to the attention of the Telecommission are:

1. There is no indication of any particular preference for the provision of services by government departments, government corporations, or investor owned companies. There is a general mix of all three in the countries studied.
2. Brazil offers an interesting case history in which a national communications corporation was created to provide the national telecommunications system and the country operates within the framework of national and state telecommunication plans in which all three levels of government have certain responsibilities.

3. In most of the countries examined in this study, there is only one organization for international communications. Spain appears to be the only exception. Many countries, like Canada, have differentiated between the organizations providing domestic services and those providing international services.

### Special Considerations

#### Spectrum Management

Without exception, all the countries studied have located the responsibility for spectrum management with a central government authority. Information is not available from all countries but it appears that in most instances the authority for spectrum management has been located in a government department or Ministry, rather than the operational carrier.

In countries where the operational entity is in fact a government ministry or department, the spectrum management usually rests with the department. In the United Kingdom, Japan, Mexico, and Sweden, this responsibility is not with the operational carrier but with the appropriate Ministry. An interesting exception is Kenya where responsibility for the frequency spectrum rests with the East African Posts and Telecommunications Corporation through its service department.

The assignment of responsibility for the management of the spectrum appears, in most countries, to be very similar to the Canadian approach.

## Broadcasting

In the area of broadcasting, there are one or two factors that stand out as having potential interest for those familiar with the Canadian situation.

1. In some countries, the broadcasting facilities are provided by the operating telecommunications carrier.
2. Several countries have special regulatory or advisory bodies to consider the matter of broadcasting programming and content.

With reference to the first point, the reports from Sweden, Switzerland, United Kingdom, and Australia indicate that the operating telecommunications organizations in these countries also provide the broadcast transmitting facilities. However, in all cases the programming and the use of the facilities is carried out by a separate entity. In Sweden it is Sverges Radio, in Switzerland it is the Société Suisse de Radiodiffusion et Télévision, and in Australia it is the Australian Broadcasting Commission. It should be noted that in Australia the PTT only provides facilities for the national stations.

Not all replies received provided information on the question of the regulation of broadcast programming and content. However, it appears that many of the countries studied focus on the regulation of programs separately from the technical regulation of broadcasting or the regulation of other aspects of telecommunications. Germany provides an interesting case in that the authority over broadcasting falls within the competency of the "Laender" of the Federal Republic. However, control over technical matters rests with the Federal Minister and two particular broadcasting organizations (Deutsche Welle and Deutschlandfunk) are also subject to Federal Law.

In Japan the Broadcasting Law calls for special Consultative Committees, in Sweden there is a Radio Council and in Australia there is an Australian Broadcasting Control Board. In other countries a different ministry or state organization is involved in this aspect of broadcasting. For example, in Mexico, the Ministry of the Interior is concerned with program content while it is an area of responsibility for the Federal Police in Brazil.

It should be mentioned that, in the case of Kenya, broadcasting is a national matter coming under the Minister of Information and Broadcasting. The only role played by the East African Corporation is the assignment of broadcast frequencies.

#### Competition

In **all** the countries examined, telecommunications is considered as a monopoly and there is little or no competition with respect to the provision of telecommunications services. In those countries where private businesses do operate, they operate under a licence granted by the central telecommunications authority.

The reports from a couple of countries indicate that the carriers have the first right to provide all telecommunications services and private communication facilities can only be provided with their approval. For example, in Australia permission must be obtained from the Postmaster General's Department to establish private facilities and these are only authorized if the department cannot provide the facility. The same situation exists in India.

### Data Transmission

One subject of mounting interest in Canada is the relationship between computers and communications. Not all countries identified this as a particular "Contemporary Issue". However, Mexico, Australia and Japan did make reference to issues with reference to data transmission. For example, Japan noted that solutions are being sought for institutional consolidation for the use of transmission facilities and the operation of that service. In Australia, it was noted that the use of computers poses special problems with regard to the difficulties relating to the development of private wire networks which, in general, are provided to interconnect branches of the users' own enterprises but which are not authorized to be used to bypass common carrier facilities over long distances in making calls from one local network to another.



AUSTRALIA

SUMMARY INFORMATION

Total Telephones..... 3,392,436

Telephones per 100 Population..... 28.20

Per Cent Automatic..... 88.0<sup>1</sup>

Telecommunication Carriers

Domestic Telecommunications.....( Postmaster General's Department

International Telecommunications.....( Overseas Telecommunications Commission

Regulatory Environment (Telecom)..... ( Government

( Postmaster General

Broadcasters..... ( Australian Broadcasting Commission

( Private Broadcasters

Regulatory Environment (Broadcasting)..( Government

( Postmaster General

( Australian Broadcasting Control Board

1 These figures, and the corresponding figures in the summaries for the other countries, were taken from, AT&T Long Lines, The World's Telephones, January 1, 1969



## CHAPTER 3

### AUSTRALIA

#### The Provision of Telecommunication Services

Australia's national public telephone and telegraph services are established as part of an executive Government Department in the charge of the Postmaster-General who is a Minister of State responsible to the Legislature of the day. Internationally, these services are provided by a Statutory Authority which also comes under the same Minister of State. Broadcasting and television services operate under the provisions of the Broadcasting and Television Act and comprise both National and Commercial Broadcasting and Television Systems.

The programmes of the National Broadcasting and Television Services are provided by the Australian Broadcasting Commission whilst the Commercial services are operated by private enterprise under licences granted and renewed by the Postmaster-General after taking account of any recommendations made by the Australian Broadcasting Control Board. The Australian Broadcasting Commission and the Broadcasting Control Board are Statutory Authorities operating under the Ministerial control of the Postmaster-General.

In addition to the authorities just mentioned, the Weapons Research Establishment, acting on behalf of the National Aeronautics and Space Administration (N.A.S.A.), the Department of Civil Aviation, the Defence Services (Commonwealth Government Departments), the Railway

Systems, Police, Power Supply, Water and Drainage and Fire Brigades (all of which are generally either State or local government authorities) and the Royal Flying Doctor Service (which provides medical services to remote areas) provide and maintain telecommunications services which meet their specialized requirements. These specialized services are inter-connected in some degree with the telecommunications facilities of the Postmaster-General's Department.

Ownership of the Organizations. The Commonwealth of Australia Constitution Act gives the Federal Parliament complete power to make laws with respect to postal, telegraphic, telephonic and like services. Private companies operate in the commercial broadcasting and television fields and, as already indicated, some semi-Government and commercial bodies operate private telephone and telegraph services under licence from the Postmaster-General's Department. However, the relevant legislation which permits operation of these services on a private basis is such that the services must only be used for the business of the addressee and not for providing a public communications service.

Rights and Responsibilities. The Rights and Responsibilities of the bodies controlling the various public communications services are contained in a number of Acts which set out the area of activity for each body. The detailed arrangements for providing and operating the different services are contained in Regulations made under the Acts referred to.

Acts and Regulations. Broadly, the Acts covering Australia's communications services are: -

Post and Telegraph Act. This is the basic instrument and sets out the area of activity of the Postmaster-General's Department. The Act lays down the rights and responsibilities of the Department in so far as postal and telegraphic (including telephonic) services are concerned.

Post and Telegraph Rates Act. This Act is designed to be read as one with the Post and Telegraph Act. It prescribes the basic rates for postage and telegrams.

Broadcasting and Television Act. This Act provides the statutory backing for the Australian Broadcasting Commission and the Australian Broadcasting Control Board. In addition, it lays down licencing conditions in regard to broadcasting and television, programme requirements, and limitations on ownership of groups or companies operating commercial broadcasting and television stations.

Wireless Telegraphy Act. Deals with all wireless transmission and reception other than that covered in the Broadcasting and Television Act in the form of broadcast or televised programmes.

Overseas Telecommunications Act. This Act sets up the Overseas Telecommunications Commission and sets out its powers and functions.



### Organization and Functions of Communications Authorities

As indicated above, the Postmaster-General's Department provides and operates all domestic telephone and telegraphic services. The organization and functions of the other communications authorities under the control of the Postmaster-General may be summarized as follows:

The Overseas Telecommunications Commission (Australia). The Commission consists of five members appointed by the Governor-General. The General Manager is the Chief Executive Officer and the staff is appointed by the Commission under the O.T. Act.

The main functions of the Commission are:

1. Establishment, maintenance and operation of public telegraph service between Australia and overseas countries and territories;
2. Establishment and maintenance of radio transmitting and receiving equipment and cable terminals and satellite earth station facilities for the conduct of overseas public telephone services;
3. Operation of coastal radio stations for the conduct of public radio-telegraph and radio-telephone services with ships at sea and aircraft on overseas routes.

Broadly, the Post Office (i.e. Postmaster-General's Department) handles telephone and telegraph traffic to or from overseas countries between the coast of Australia and the subscriber in Australia whilst the Commission handles telegraph traffic beyond the coast and provides the overseas links for the telephone service conducted by the Post Office. The Commission may also accept and deliver public telegrams through its own offices but they must be international traffic. Domestic traffic is accepted and delivered by the Post Office.

The O.T.C. is the Australian National Body for international communications and as such participates in Commonwealth and International Telecommunication partnerships at the operating level. For example, the Commission is Australia's representative on the Commonwealth Telecommunications Council, the Commonwealth Cable Management Committee and the Interim Communications Satellite Committee. At inter-Governmental Partnership meetings, the Post Office in its Department of State role is represented.

The Australian Broadcasting Commission. The Commission comprises nine members appointed by the Governor-General, of whom at least one must be a woman. The General Manager is the Chief Executive Officer and the staff is appointed by the Commission under the Broadcasting and Television Act.

In its simplest form, the function of the Commission is to provide National Sound broadcasting and television programmes. The Commission must broadcast or televise, free of charge, any matter which the Postmaster-General considers to be in the National interests. News and current events programmes must be broadcast at least daily.

The Post Office provides programme lines for use by the Commission and collects fees for and issues broadcast listener's and television viewers' licences. The provision and operation of transmitters and other technical facilities used by the National stations are the responsibility of the Post Office, except for studio equipment which is provided and operated by the Commission.

Australian Broadcasting Control Board. The Board comprises five members appointed by the Governor-General. The staff of the Board are public servants employed under the Australian Public Service Act.

The Boards responsibilities include ensuring that all broadcasting and television services are in accordance with plans and standards approved by the Board.

The Post Office performs, on behalf of the Board, functions covering the detection and suppression of interference to the reception of programmes and the inspection of Commercial Broadcasting stations.

Interacting Responsibilities. It will be seen from the foregoing that there are definitive interacting responsibilities from the

operating viewpoint between the Post Office and the other organizations mentioned. However, each is a separate entity and none of the organizations named is responsible to the other. The Post Office does, however, perform some functions on behalf of the three Statutory Authorities.

#### Major Telecommunications Services Provided

Policy. It is the policy of the Postmaster-General's Department to provide and maintain all basic telecommunications facilities as part of its common carrier service and to rent these to users. However, specialized facilities which are not provided by the Department are frequently provided by private individuals after being given permission by the Postmaster-General's Department to supply and maintain their own equipment. These special permitted attachments may only be connected after they have been examined by Post Office staff to ensure that they would operate in a reliable manner and would not prejudice the operation of the network for other users.

The permitted attachments include loud-speaking telephones, automatic dialing devices, telephone answering and message recording devices, data processing terminal equipment (although standardized data modems are rented by the Post Office) and computers used for on-line A.D.P. applications.

Domestic Services. Domestic services provided include, on the telephone side, all of the generally accepted services such as normal subscriber services, Private Branch Exchange facilities, data service, leased private wire facilities, etc. In addition, many special types of calls are available including fixed time, reverse charge, press, personal and conference calls, and so on.

Telegraph Services available include the normal public telegram service, telex, phototelegram and data services and leased private teleprinter services. Again, many special telegram categories are available including urgent and ordinary rate messages, press telegrams, greetings, messages, "collect" facilities, and Phonogram facilities for the acceptance and delivery of telegrams by telephone are also provided.

The Post Office also provides, on a leased basis, private lines of all characteristics from D.C. hand-speed keying to video bandwidths. These are connected to provide specialized networks for the private and governmental authorities.

International Services. International services available include public telephone, telegram and telex facilities. International leased private line facilities and telex and data services are also available, whilst public and private phototelegram services are available to many countries. Telephone calls and telegrams may be exchanged between the Australian coast and ships at sea.



Various categories of telephone calls and telegrams are offered, including station-to-station calls on two routes (U.S.A. and Canada), collect and credit card calls with certain countries, urgent, ordinary and deferred rate messages are handled, as are many other classes of calls and messages.

### Rate of Growth of Telecommunication Services

Past Demand. The demand for telecommunications services has risen steadily during the last 10 years and the trend is expected to continue.

As an example of past growth it is mentioned that the number of telephone services in Australia had risen from 1,491,317 in 1959 to 2,358,837 at the end of June, 1968.<sup>2</sup> To cater for these increases it has, of course, been necessary to install more circuits and this has resulted in a rise from 17,000 trunk circuits in use in 1959 to 49,000 in June, 1968.

The number of telex services rose from 684 in 1960 to 5,067 in 1969.

International telephone and telex calls have also risen consistently over the years.

Expected Growth. For the future, it is expected that telephone traffic will continue to rise. For example, the growth rate is estimated to be of the order of about 5-6 per cent for local calls and 13 per cent for trunk calls during each of the next two years.

2. These figures are for "telephone services" and apparently do not include extension telephones. This could explain the discrepancy between the figures shown here and the figure for total telephones shown in the summary on page 20.

Telex call lodgments are expected to rise fairly steeply, both nationally and internationally, over the same period, the expected increases being about 30 per cent and 50 per cent respectively.

Public telegram traffic has been fairly constant for some time now and the present position is not expected to alter greatly.

The number of telephone services is expected to increase from about 2.5 million at June, 1969, to 3 million by 1972 - a rise of about 20 per cent. The number of telex services, too, is expected to rise substantially. At June, 1969, there were 5,067 of these services in operation and this figure is expected to more than double to 11,250 at June, 1972.

### Jurisdiction

As outlined above, the Australian Government has complete power to make laws covering all telegraph, telephone and like services. Copies of the relevant Acts are included with the attachments.

### The Regulatory Situation

Overall Control. The organizations responsible for the control of Australia's telecommunications are those referred to in the above section dealing with the organization and functions of Communications Authorities. The relevant legislation in Australia makes no provision for independent bodies or Government agencies to regulate autonomous

telecommunication entities to provide public services, or for Government agencies to own, operate and control public telecommunication systems.

Setting of Rates and Conditions of Service. So far as the setting of rates, etc. is concerned, there is no one set formula for arriving at telephone, telegraph and other communications charges. Rather, these are decided on after taking account of such matters as Government policy, costs of operating the service, and the demand for a particular facility. Conditions of providing service are such that not all telecommunications services are operated at a profit. It is Government policy to provide these facilities over as wide an area as practicable and because of the distances involved, the costs of providing and maintaining many telephone and telegraph services are quite often above those charged to the subscriber. This factor is kept in mind when overall rates and charges are being arrived at.

Constraints. Notwithstanding that all public telephone and telegraph services are Government-controlled and operated, the operating authorities are required to conduct them as business undertakings. Any proposal to vary rates and charges, etc. must be approved by Parliament.

Commonwealth Organizations. Australia is a member of the Commonwealth Telecommunications Organization. The Overseas Telecommunications Commission is the National Body on that organization.

Because of Australia's participation in this organization, rates for overseas services have regard to rating principles adopted by the Commonwealth Partnership. In addition, I.T.U. Regulations and C.C.I.T.T. Recommendations are followed where appropriate, whilst Government policy is also a consideration in determining rates.

Accountability to Government - Postmaster-General's Department.

The Postmaster-General's Department conducts its financial affairs through the Post Office Trust Account which is an integral part of the Trust Fund of the Commonwealth Government. All revenues are paid into this account and all expenditures are made from it.

The annual expenditures, both operating and capital, exceed the annual revenue and the shortfall is provided by the Government by annual appropriation.

Section 96(A)-(M) of the Post and Telegraph Act, 1901-1968, refers to this aspect.

Overseas Telecommunications Commission and Australian Broadcasting Commission. The extent of the above organizations' financial accountability is contained in the respective Acts.

The Regulatory Approach

The philosophy in relation to the provision of communications services is based on the concept that the services required by the public shall be provided by the Postmaster-General's Department in all cases

where it is considered practicable and expedient for the Department to do so. As indicated previously, no provision exists for independent bodies to regulate or provide public telecommunications services. Where approval is granted to private enterprises to establish their own communications services there are conditions which are designed to protect the interests of the Postmaster-General's Department as the nation's common carrier. Among other things, these conditions restrict the nature of communications which may be undertaken on a private basis to matters relating to the business of the person or persons concerned.

#### Special Considerations

Radio Frequency Spectrum. The management of the radio frequency spectrum is undertaken by the Postmaster-General's Department. Frequencies for all classes of radiocommunication stations and services in Australia and its Territories are assigned from frequency bands allocated in accordance with the general principles stipulated by the International Radio Regulations and recommendations made by a special radio frequency review committee.

Special problems relating to the selection of frequencies for use by the major users such as the Postmaster-General's Department and the Defence and Civil Aviation Departments are dealt with by a Telecommunications Advisory Committee which comprises staff representatives from the major user concerns.



Public Broadcasting Services. The Australian Broadcasting Control Board is responsible for legislation affecting broadcasting services. The Board (referred to in previous sections) exercises the rights, powers and functions conferred upon it by the Broadcasting and Television Act 1942-1965.

Full information relative to programmes, technical standards, etc., may be found at pages 52-56 of the Broadcasting and Television Act. Broadly, licencees of broadcasting and television stations are required to ensure that the equipment used and the programmes provided are adequate and comprehensive and are in accordance with standards determined by the Board from time to time.

Inter-relationship between Public Telecommunication and Broadcasting Services. The Postmaster-General is responsible for the regulation of both telecommunication services and broadcasting and television services. As stated above, the operational functions are carried out by different bodies but there is, nevertheless, a close liaison between the organizations concerned.

The Government Role in Establishing Special Telecommunication Facilities for Aviation and Marine Communications, etc. The Federal Parliament has introduced Acts which provide for the establishment of organizations charged with the functions of providing the necessary telecommunication facilities for aviation and marine purposes.

The organization concerned with aviation is the Department of Civil Aviation and the relevant legislation is the Air Navigation Act and Regulations.

The party providing communications between Australia and ships at sea is the Overseas Telecommunications Commission (Australia). The authority for this arrangement is contained in the O.T. Act.

### Contemporary Issues

In the future, particular areas of difficulty which face the Postmaster-General's Department and for which solutions must be found, include communications affecting isolated mining projects. These are currently provided on a privately-owned basis and are maintained either by the Department or by private maintenance. With time, several of these localities are likely to be developed as "open" towns in which it is expected that the normal common carrier facilities would need to be available to all citizens, as is the case in other parts of the nation.

Another particular area of difficulty relates to the development of private wire networks which, in general, are provided to inter-connect branches of the users' own enterprises but which are not authorized to be used to by-pass common carrier facilities over long distances in making calls from one local network to another. The use of computers poses special problems in this regard.

BRAZIL

SUMMARY INFORMATION

Total Telephones..... 1,560,701

Telephones per 100 Population..... 1.74

Per Cent Automatic..... 85.0

Telecommunication Carriers

Domestic Telecommunications..... ( Brazilian Telecommunications Enterprise

( Mail and Telegraph Enterprise

( Brazilian Telephone Company

( Concessionaire Telephone Companies

International Telecommunications.... ( Brazilian Telecommunications Enterprise

Regulatory Environment (Telecom)..... ( Government

( Minister of Communications

( National Telecommunications Council (CONTEL)

( National Division of Telecommunications (DENTEL)

Broadcasters..... Variety of Federal, State, Municipal and  
Private Broadcasting Stations

Regulatory Environment (Broadcasting)..( Government

( Minister of Communications

( DENTEL/CONTEL

( Federal Police

BRAZIL

The Provision of Telecommunications Services

In the past, there appears to have been, in Brazil, a problem area with respect to the public services offered by private companies. Communication tariffs were not permitted to keep pace with inflation, discouraging reinvestment for maintenance and expansion. On the other hand the government invoked poor services to forbid any reasonable increase of tariffs. In the early 60's some initial attempts at improvement were made, especially by State Governments. In 1964 the National Communications Council (CONTEL) was created and charged with solving the country's communications problems. This led, in 1965, to the creation of the Brazilian Communications Corporation (EMBRATEL) and the nationalization of the Brazilian Telephone Company (C.T.B.).

Telecommunication services are now provided by the following organizations:

Brazilian Telecommunication Corporation (EMBRATEL)

The Brazilian Telecommunication Corporation was created to establish, maintain and operate the telecommunication services which are under the Union's jurisdiction. EMBRATEL is a public enterprise reporting to the Minister of Communications. The Federal Government is by far the largest shareholder of EMBRATEL owning 19,400 shares out of a total of 20,000. The remainder is divided among similar public corporations.

The principal functions of this enterprise can be summarized as follows:

1. To implant and industrially exploit:
  - a) the branches which form or come to form the National Telecommunication System;
  - b) the international connections of the National Telecommunication System.
2. To industrially exploit the other telecommunication services directly attributed to the Union.
3. To participate, as government agent, in the administration of governmental enterprises engaged in the provision of telecommunication services, representing it at shareholders' meetings.

The scope of the basic programmes to be implemented by EMBRATEL can be summarized in the following manner:

1. To endow the country with an interstate telecommunication infrastructure capable of meeting in full the present and future needs.
2. To make possible reliable and high quality telecommunication services including telephone, telegraph, telex, "facsimile", data transmission and transmission of television and high fidelity programmes.



3. To start long distance direct dialing with automatic billing in the interstate circuits.
4. To make it possible for the country to participate in the International Communication System by satellite, supplying Brazil with suitable channels both in number and quality for communicating with other countries.

At the national level, the most important achievement has been the execution of the National Telecommunication Plan in view of building a system connecting the different regions of the country by microwave including:

1. Systems of high capacity - 960 or 1800 voice channels by RF channel, allowing the transmission of telephone, telegraph, telex, "facsimile" data transmission and the transmission of television and high fidelity programmes.
2. Troposcatter - a system with maximum capacity for 120 voice channels, allowing the transmission of telephone, telegraph, telex, "facsimile" data transmission and high fidelity programmes in servicing the less populated areas.
3. A short wave (HF) system of low capacity allowing the transmission of telephone, telegraph, telex and "facsimile" in the Amazon area. At the beginning, the system will serve two cities, Manaus and Boa Vista, until it becomes possible to install a low capacity troposcatter system.

The National Telecommunication Plan foresees the construction of 10,550 kilometres of microwave of which approximately 5,400 kilometres have been completed.

Parallel to the implementation of the National Telecommunications System, the Ministry of Communications fostered the execution of state plans, aiming at the interconnection of the state capitals to the cities within each state, as well as the installation of the urban systems. According to the words of the Minister of Communications, the great majority of the Brazilian states are executing their plans; this system will service eventually 90 per cent of the population.

At the international level, a land station for satellite communication was installed by January 1969 in the State of Rio de Janeiro. The station, in commercial operation since that date has as counterparts Chile, Mexico, U.S.A., Germany, Italy, Spain, Argentina, Venezuela and Peru. It maintains indirect or direct contact with more than sixty countries in the Americas and Europe. EMBRATEL uses also short wave (HF) in international connections as a complement and reserve to the satellite system.

#### Foreign Companies Providing International Telecommunication Services

The Brazilian Government has just decided not to extend or renew the licensing contracts given to foreign companies (Western Tel, RadioBras, Radional, etc.) engaged in the operation of international

telecommunication services. Although recognizing the good services rendered by those companies, the government stated that the measure was necessary in defence of national interests.

### Telephone Companies

As the result of an unrealistic rate policy for approximately twenty years, during a period of acute inflation, telephone service in Brazil stagnated. Then, the Federal Government bought the Brazilian Telephone Company, which together with its subsidiaries in the states of Sao Paulo, Minas Gerais, Rio de Janeiro and Espirito Santo, constitutes by far the largest group providing telephone service in Brazil. They operate more than one million telephones. According to unofficial figures, in early 1969, Brazil had a total of 1,651,450 telephones, that is, a rate of 1.83 for each group of 100 inhabitants. The Brazilian Telephone Company is now engaged in a significant Expansion Plan which foresees the installation of more than 500,000 automatic terminals, with a total of 600,000 telephones. The total cost of the Plan is estimated in about \$218 millions and the idea is to have a great part of it financed by the future subscribers to the telephone services (some of them waiting for a telephone for about 15 years) who must buy about \$500.00 in shares in order to have priority in receiving the telephones. Up to now the number of subscribers is far below that expected.

It should also be mentioned that there are almost 900 telephone companies in Brazil, some of them operating only one channel, with four telephones. The trend in the Government is to merge these concessionaires in larger companies aiming at operational economy and better service.

### Telex Service

After the creation of the Ministry of Communications, in March 1967, the National Telex Service, administered by the Telegraph and Mail Corporation, experienced good progress, although it is still relatively undeveloped. The following figures give a realistic picture of the situation as of one year ago showing also the development achieved in this field.

Number of subscribers on March 15, 1967.....	896
Number of subscribers on December 31, 1968.....	2,660
Telex terminals installed in this period.....	1,794
Central Stations existing on March 15, 1967.....	7
Central Stations existing on December 31, 1968.....	16

The next expansion plan will try to bring the number of subscribers to 6,580; it is expected that this number can eventually be brought to 10,000.

### Special Telecommunication Services

Mobile Aeronautic Service - The Government has just created a public enterprise named TASA (Telecomunicações Aeronauticas S/A).

This enterprise is in charge of flight protection, both national and international and will, in time, provide public service in aeronautic communication.

Mobile Marine Service - The Mail and Telegraph Enterprise maintains the coastal stations which support maritime navigation and also provides public services in marine communications.

On the other hand, the Government gives permission to large shipping companies to maintain private services, in order to cover the deficiencies of the Mail and Telegraph Corporation.

#### Broadcasting Services

In the Brazilian Telecommunications Code is found the assertion that "radio broadcasting services, including television, will be executed by the Union directly or by licensing, authorizing or granting permission to others".

According to official statistics, there are 1,084 radio stations in Brazil for public broadcasting. There are another 1,797 stations for limited private service. There are a few radio stations owned and operated by the Federal, State and Municipal Governments. At the Federal and State levels, they are under the direct administration of some Departments such as Education, Labour, Agriculture, etc. Existing figures are not reliable. Regarding television, although the official statistics give a total of 70 stations, only 43 are thought to be in operation, including the 3 educational ones. According to non-official sources, there are 1,336,000 radio sets and 432,000 television sets in Brazil.



There is no network in Brazil, at least according to Canadian or American patterns. However, there are stations owned by certain groups, which maintain a permanent exchange of programmes in video-tape or operate eventually in chain for the simultaneous coverage of some relevant event of national interest. The largest of these groups is the so-called "Emissoras Associadas", which owns 16 television stations and 23 radio stations. In radio and television it is also worth mentioning the stations belonging to the "O Globo" group, largely owned by the members of the Marinho family. There was a report that the United States Corporation "Time-Life" put a large amount of money into this enterprise in a move which would not be according to Brazilian law. The matter was the subject of an enquiry in the National Congress with negative results, but could be reopened at some time.

For the simultaneous transmission of television programmes between various cities, EMBRATEL has been installing "commuting and distributing centres" in the cities served by its branches, which have local TV stations. There are TV centres operating or being installed in 24 Brazilian cities.

### Jurisdiction

#### Federal Government

The Federal Government plays a variety of roles in Brazilian telecommunications.

1. It maintains and provides directly:
  - a) The services of the trunks which integrate or will integrate the National Telecommunication System, including its international connections;
  - b) The public telegraphic service inside the country;
  - c) The public telex service inside the country;
  - d) The interstate public telephone service.
2. It provides directly or through concession:
  - a) The telecommunication services which use radio-electric waves as transporter, and whose direct exploitation is not of its exclusive competence;
  - b) The international telecommunication services, through the installation and operation of stations in determined points of the national territory, with the only purpose of establishing an international public service. The services granted will not have an exclusive character;
  - c) The radio service (regional or national) and the television service.
3. It exploits directly or through concession the special services, comprising:
  - a) Time signals;
  - b) Standard frequency;

- c) Weather forecast bulletins;
  - d) Services destined to scientific or experimental purposes;
  - e) Of functional music;
  - f) Of radio determination.
4. It grants permission for the exploitation of:
- a) Radio amateur services.
5. It controls:
- a) The telecommunication services granted or conceded;
  - b) The telecommunication services granted by the states of the Federation or the municipalities, in all the aspects of the observation of the general norms established by the Code and General Regulations, by the Specific Telephone Regulations, the Federal legislation on the matter and the integration of said services in the National Telecommunication System.

#### The States and Territories

The role of the States and Territories is:

1. To provide directly or through concession, the intermunicipal telephone service, within the limits of its respective territory, obeying the National Telecommunication Plan, the Code and General Telephone Regulation and the norms established by CONTEL.

2. To provide, under its direct responsibility and administration, within the limits of its respective territory, the limited telegraph interior service, exclusively for official communications and by permission of the Federal Government.
3. To provide radio and television services without exclusivity and through concession or by permission of the Federal Government.

### Municipalities

#### The Municipalities:

1. Provide directly or through concession, the telephone services within the limits of their respective territories, obeying the National Telecommunication Plan, the Code and General Regulations, the Special Telephone Regulation and the norms established by the CONTEL.
2. Provide radio and television services without exclusivity and through concession or by permission of the Federal Government.

### The Regulatory Situation

The regulatory system, established at the federal level, comprises the following legal instruments: a National Telecommunication Code issued in 1962 and its functional counterparts, i.e. a General Regulation, Specific Regulations (on telephone, telegraph, public broadcasting, amateur radio) and Special Regulations and ad hoc Norms

issued by the regulatory body. Unfortunately all that legislation has recently been found obsolete; a consolidation and revision of it is being prepared and by the end of 1970 is expected to be in effect. This report is based exclusively on existing laws.

In March 1967 the Ministry of Communications was established taking under its direct administration the National Telecommunication Council (CONTEL) and its executive body the National Department of Telecommunications (DENTEL).

CONTEL is now a consulting body, reporting to the Minister of Communications and composed of representatives of the Armed Forces and of different Ministries. Its main functions are to advise the Minister on changes to be made in the National Telecommunication Policy or in the legislation.

DENTEL is the organization responsible for the control of telecommunications. In addition to its headquarters in Rio de Janeiro, it has Regional Offices in the main state capitals.

In reality organizations providing telecommunication services are left in most cases with a great deal of leeway as far as economic performance, technical standards, conditions of service are concerned. This may reflect a shortage of qualified staff, or political factors. For example, the Code establishes that the terms for grants and authorizations shall be ten years for radio broadcasting and fifteen years for television. These terms can be



renewed for similar and consecutive periods if the concessionaires have complied with every legal and contractual obligation, and have maintained the same technical, financial and moral appropriateness. It has not proven feasible, however, to apply these rules to the latter. In this connection, one might note the close working relationship between the communications media and the Government on matters of particular interest to the latter.

Control over rates however has always been very tight. Rates are now set according to a fixed rule: all telecommunication services rates must allow for the covering of the costs of service (operation costs, taxes and 12 per cent profit on investment) plus 10 per cent for depreciation.

### The Regulatory Approach

The dominant preoccupation in this field as in many others at this moment is the maintenance of internal security by a government controlled by the Armed Forces. This explains the presence of the latter in CONTEL and the precedence given to military requirements.

On purely technical grounds, the control and regulation are not entirely effective for the various reasons mentioned before. The technological development of the system is very slow (c.f. telephone) with a few exceptions (c.f. microwave).

### Special Considerations

The Ministry of Communications through DENTEL is responsible for the management of the radio-frequency spectrum to permit the development and growth of radio communications. But there is no special body (like the Canadian Radio Television Commission in Canada) responsible for the regulation of broadcasting; this area is also under the direct control of DENTEL with the exception of the control of program content which is with the Federal Police.

Following are the rules and provisions which shall be observed in granting licenses for the execution of radio broadcasting services and which are also worth mentioning in this study:

1. The directors and managers shall be Brazilian native-born and the technicians in charge of operating the transmitting equipment must be Brazilian or foreigners living in the country. Exceptionally, the latter functions can be performed by foreign specialists admitted by means of contract and by special authorization of the National Telecommunications Council.
2. Any alteration in the statutes of the companies will only become effective with the approval of the Government after the previous recommendation of the National Telecommunications Council.

3. The transfer of the license, the grant of quotas or shares will only become effective with the approval of the Government, after the recommendation of the National Telecommunications Council.
4. The information, entertainment and publicity services of the broadcasting companies must seek the educational and cultural goals inherent in radio and television broadcasting, aiming at the highest interests of the country.

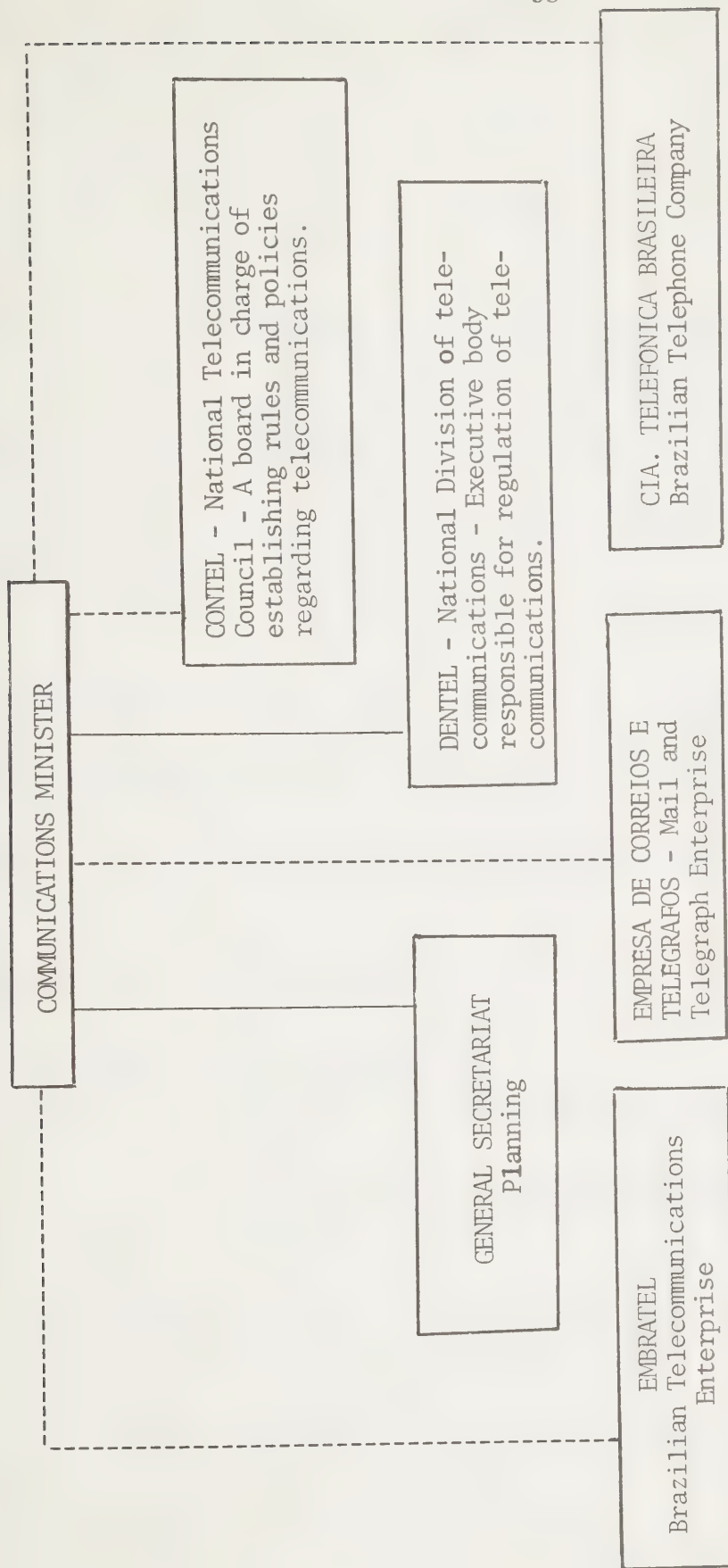
Radio broadcasting stations (television excluded) are required to rebroadcast the official information program of the Government including an information program prepared by the two Houses of Congress. In addition, the 'Agencia Nacional', the information agency of the Presidency of the Republic, normally arranges for the country-wide rebroadcast on radio or television of information programs or speeches in which the Government is interested.

The same article 38 establishes in its paragraph 8 that the broadcasting stations must reserve a minimum of 5 per cent of their time for the broadcast of news programmes. Again, this provision is not complied with by every station.

Article 39 of the Brazilian Telecommunications Code states that radio stations must reserve two hours daily for free electoral propaganda, within the 90 days prior to general elections in the country or in the electoral district where they are located. The time will be divided proportionally among the parties, according to their participation in the National Congress and local Assemblies.

#### Contemporary Issues

Apart from the consolidation and revision of the legislation, it is worth mentioning the project of reorganizing the technical control over telecommunication services. The first step has already been taken, i.e. the sending of Brazilian specialists to study problems and situations existing in other countries.





FRANCE

SUMMARY INFORMATION

Total Telephones..... 7,503,491

Telephones per 100 Population..... 14.98

Per Cent Automatic..... 78.1

Telecommunication Carriers

Domestic Telecommunications..... ( Ministry of Posts and Telecommunications (PT

International Telecommunications.... ( Ministry of Posts and Telecommunications (PT

Regulatory Environment (Telecom)..... ( National Assembly

( State Council

( Minister of Posts and Telecommunications

Broadcasting..... Office de Radiodiffusion - Television  
Francaise (ORTF).

Regulatory Environment (Broadcasting)..( Prime Minister

( Board of Directors

FRANCE

The Provision of Telecommunication Services

In France, telephony was initially operated by private companies which had obtained a concession from the state for the organization and expansion of telephone systems. Telegraph Services, on the other hand, were always completely provided by public authorities.

In 1889, the private telephone systems were purchased by the State. In 1925, a General Secretariat of Post, Telegraphs and Telephones was created; it became in August 1959 the Ministry of Posts and Telecommunications, an appellation which corresponds more truly to the extent of its contemporary responsibilities which include radio communications.

Today, telecommunication services, domestic and international are provided by one of the three divisions of the Post Office and Telecommunications Ministry. These three divisions are:

1. Postal Service - transportation and distribution of letters, parcels, and printed matters.
2. Financial Services - postal cheques, money orders and the National Savings Bank.
3. Telecommunications Services - telephone, telex and telegraph.

Because of historical and functional reasons the three branches are integrated under the same administration for which the Minister is responsible.

Scope of Operations Indicated by Financial Statistics

To give an appreciation of the size of the entire operation and the relative importance of its divisions the following statistics for the year 1968 are quoted from the P.T.T. annual report.

Fig. 1

Net Increase in Capital Investment (millions of francs) (1968)

Postal Services	-	205
Financial Services	-	165
Telecommunications	-	<u>2,962</u>
Total	-	3,332

Operating Revenues for 1968 (millions)

Postal Services	-	3,018
Financial Services	-	2,598
Telecommunications	-	<u>6,387</u>
Total	-	12,003

Profit and Losses (millions)

Postal Services	-	457 (loss)
Financial Services	-	144 (loss)
Telecommunications	-	<u>1,793</u> (profit)
Total	-	1,192 (profit)

Note: The total Net Capital for PTT at 31st Dec., 1968 was approximately 17 billion francs.

Jurisdiction

The matter of telecommunications comes under the jurisdiction of the National Government of France. The Government is omnipotent in this field and exercises an indisputable monopoly. The exercise of the monopoly in all branches of activities relating to telecommunications comes first under the Ministry of Posts and Telecommunications.

The Regulatory Situation

There are two levels of regulatory control in France. The first level is exercised by the legislators. The National Assembly establishes the broad concepts and principles by which telecommunications service will be exploited. Essentially, the legislative texts define telecommunications and delimit the extent of this state monopoly. They also establish the powers of the administration.

The PTT Code is divided into three sections, legislative, regulations, and decrees. It deals in succession with the Postal Service, Telecommunications Service, the financial organization of the PTT, and financial services. The latter relates to the postal service as it pertains to cheques and money orders.

The Code deals with all the possible aspects of telecommunications. The first part of it establishes the principles regulating the telecommunications service. It deals especially with telecommunications monopoly, protection of submarine cables and the private installation of radio facilities. The Decrees also set out the administrative organization of telecommunications.

The legal aspects of secrecy, right-of-way, e.g. the use of public domain and expropriation, as well as liability in case of inadequate performance (quality, continuity, errors) are covered by legislation.

In addition the legislation covers the protection of submarine cables and the principles governing the radio frequency installations.

The second level is exercised by the State Council in the form of decrees and by the P.T.T. administration placed under the authority of the Minister in the form of rules. Decrees and rules have their support in the legislation. The administrative structure itself was established and may be altered by simple decrees.



## Special Considerations

### Broadcasting

Although it is not free from the monopoly of the State, radio and television broadcasting in France has nowadays a special status which places it outside the authority of the PTT. Before 1959, the French radio-television (R.T.F.) was a simple administrative service attached to the Ministry of PTT (under the 3rd Republic) or to the Prime Minister's Office or to the Ministry of Information (under the 4th Republic).

The law of June 27, 1964, established the new charter of the O.R.T.F. (l'Office de Radiodiffusion-Télévision Française). The status of the O.R.T.F. is now that of a public establishment of a commercial, and industrial nature. The Board of Directors is responsible for the definition of the general policy of the O.R.T.F. and for voting its budget; it is responsible for the accuracy of the information broadcast by the O.R.T.F.; it ensures that the principle trends of thought and the great currents of opinion can be expressed; it ensures the quality and the morality of programs.

Since September 1968, the Board of Directors has included 24 members, half of them being representatives of the government. Until June 1969, the O.R.T.F. was placed under the directorship of the Ministry of Information. Following the presidential elections of 1969 and the constitution of the present

government, the O.R.T.F. was placed under the directorship of the Prime Minister who has since then introduced important changes giving the O.R.T.F. a greater freedom of action, especially in the choice and broadcasting of information.

### Contemporary Issues

The 5th Plan (1965-1970) of economical and social development gave particular attention to the problems relating to telecommunications and especially to the backwardness of France in the field of telephony. The Plan dealt also with telegraph and radio-electric networks, underwater cables, as well as the investments assigned to study and research in the field of telecommunications under the sponsorship of the "Conseil national d'Etudes des Telecommunications". It is anticipated that the 6th Plan, which is now being prepared, will devote an important part of its study and its projects to telecommunications.

FEDERAL REPUBLIC OF

GERMANY

PRIMARY INFORMATION

Total Telephones..... 11,248,979

Telephones per 100 Population..... 18.65

Per Cent Automatic..... 100.0

Telecommunication Carriers

Domestic Telecommunications.....(Deutsche Bundespost

Regulatory Environment (Telecom).....(Government  
(Minister of Posts and Telecommunications

Broadcasters.....(Chartered Broadcasting Organizations  
(Deutschlandfunk  
(Deutsche Welle

Regulatory Environment (Broadcasting)..(The "Laenders" of the Federal Republic  
(The Federal Government



## CHAPTER 6

### GERMANY

#### The Provision of Telecommunication Services

Public Telecommunication service in Germany is provided by the Deutsche Bundespost. It is a Federal Authority and is owned and operated by the Federal Republic of Germany. The major telecommunication services provided to users are: telephone services; general telegraph service (telegram service), telex service, and datex service.

#### Organization

For its postal and telecommunication administration, the Deutsche Bundespost has adopted the conventional system of organization of authorities. This organizational form, which time has proved successful, exists on three levels, i.e. the central level, the medium level, and the local level. The Federal Ministry of Posts and Telecommunications is the central administration; the Regional Postal Directorates (Oberpost-direktionen), the three central offices and the two Engineering Academies constitute the medium level, and the postal and the telecommunication offices form the local level.



The delimitation of competences between the individual levels is governed by a corresponding regulation based on the principle that any decision should rest with that authority which is mainly and directly concerned with the case in question. Accordingly, the local offices are responsible for handling and operating the services and, in addition, they perform local administrative functions, whereas the medium-level authorities have the task of performing the mass of administrative work and of controlling the local offices. The Ministry is concerned with the overall management of administration and operation and represents the Deutsche Bundespost to the public and in affairs involving other authorities, in particular foreign postal and telecommunication administration.

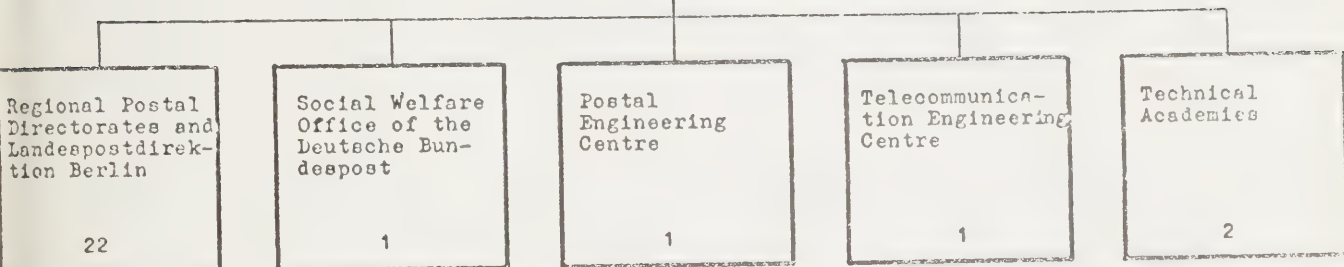
The management of the Deutsche Bundespost authorities is organized on the basis of the principle of the bureaucratic system (presidential system). Accordingly, each office is directed by one person who is responsible for the overall management. All duties not the responsibility of the head of the office are delegated to the heads of the division, section, etc., concerned, for decision on their own authority. The application of this principle ensures speedy and non-conflicting decisions, which is of special importance for an operational administration. However, in certain cases the administration cannot order measures to be taken or take decisions without the consent or cooperation of the Staff Council. This is defined by the Staff Councils Law of 5 August, 1955. Under this law the Staff Councils, elected by the staff every 3 years, have the right of cooperation and co-determination, particularly in staff and social matters.

# The Organization of the Deutsche Bundespost

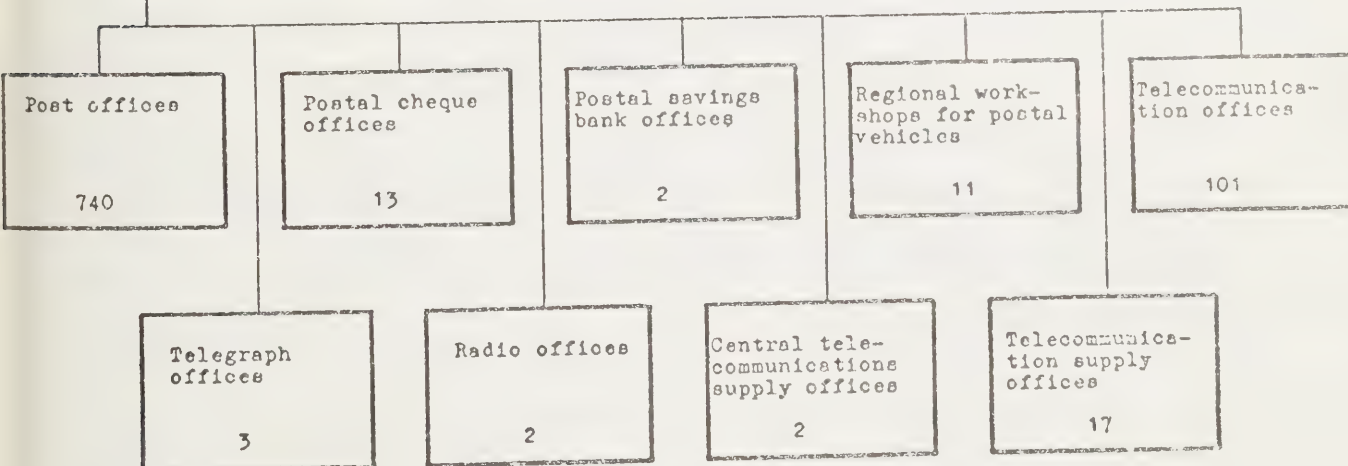
## Central Authority



## Medium Level Authorities



## Local Level Offices



## JURISDICTION

The Deutsche Bundespost is a Federal Administration

### Legal Basis

Constitutional basis. In Article 73 of the Basic Law of the Federal Republic of Germany it is defined that the Federal Government has exclusive competence for legislation within the field of Posts and Telecommunications. Furthermore, Article 87, paragraph 1, of the Basic Law provides that the Bundespost shall be managed as a federal Administration with an administrative machinery of its own. This means that it is constitutionally defined that the postal and telecommunication services fall under the sole responsibility of the Federation and not of the "Laender" which, according to the principle of a federal state as laid down in the Basic Law, in general has the right to exercise state powers.

### THE REGULATORY SITUATION

The Deutsche Bundespost is headed by a Minister. In this capacity, he is a member of the government and is bound by directives from the Federal Chancellor even though he runs this Ministry on his own responsibility.

Law pertaining to the Administration of the Deutsche

Bundespost. The law pertaining to the Administration of the Deutsche Bundespost is its organizational law and the law defines the organizational form under which the administration of posts and telecommunications shall be managed.

In view of the importance of communications for the state, the postal and telecommunication services in the Federal Republic of Germany, in accordance with Section 1 of the Law pertaining to the Administration of the Deutsche Bundespost, are not managed as an enterprise with a special directorate of its own - like the German Railways for example - but as an administration coming under the immediate control of the Federal Government, under the direction of a Federal Minister. The Federal Minister of Posts and Telecommunications protects the rights and interests and is liable for the obligations of the Federation in the field of posts and telecommunications. According to Section 2 of the Law pertaining to the Administration of the Deutsche Bundespost, he is responsible for the administration of the Deutsche Bundespost along the political lines of the Federal Republic of Germany, particularly as far as traffic, financial and social policy is concerned. Therefore, the Federal Minister of Posts and Telecommunications has two functions: he is both a political minister - in this capacity a member of the Federal Government - and head of the postal administration.

According to Section 1 of the Law pertaining to the Administration of the Deutsche Bundespost, an Administrative Council

composed of five representatives of each of the legislative bodies (Bundestag and Bundesrat), five representatives of national economy as a whole, seven members of the Deutsche Bundespost staff, and one expert for communications and one for financial matters cooperate in the management of the Deutsche Bundespost Administration. The Administrative Council, the members of which are not bound by any instructions, decides particularly upon the estimates, the approval of the annual statement of accounts and upon the rules and conditions for the use of Deutsche Bundespost facilities including the establishment of charges. Moreover, it shall ensure that the Deutsche Bundespost, in permanent contact with its customers, meets the current requirements of traffic and trade and industry as well as demands of the general public.

According to Section 3 of the Law pertaining to the Administration of the Deutsche Bundespost, the Federal fund devoted to the postal and telecommunication services and acquired from the operation of these services shall be kept separate from other funds of the Federal Government as a Special Fund of the Federation with its own budgeting and accounting. The Special Fund is the only fund liable for all obligations of the Deutsche Bundespost; it is not liable for other obligations of the Federation. The Deutsche Bundespost has to arrange its budgeting in a manner enabling it to cover from its revenue the expenditure necessary for the fulfilment of its functions and obligations. Subsidies from the Federal Treasury are not granted.



In actual fact, according the Section 21 of the Law pertaining to the Administration of the Deutsche Bundespost, the Deutsche Bundespost is bound to pay over to the Federation a certain percentage of its annual operating revenue regardless of the profit and loss position.

#### THE REGULATORY APPROACH

The Federal Minister of Posts & Telecommunications issues the regulations concerning the use of, and the rates for, telecommunications in the form of statutory ordinances. These are the telephone ordinance; telegraph ordinance; and an ordinance concerning private telecommunication facilities. These govern the rates and the conditions under which the Deutsche Bundespost provides its services. At present, the telegraph ordinance and the ordinance concerning private telecommunication facilities are being revised.

The rates for services provided by the Deutsche Bundespost are based on the costs incurred.

#### SPECIAL CONSIDERATIONS

Spectrum Management. The jurisdiction in radio matters falls within the competency of the Federal Republic of Germany. It is exercised by the Federal Minister of Posts and Telecommunications. The agency responsible for frequency management matters is the Radio Frequency Department of the Federal Ministry of Posts and Telecommunications.

Broadcasting. Broadcasting organizations are institutions incorporated under public law. It falls within the competency of the "Laender" of the Federal Republic of Germany to decide who is permitted to arrange broadcasting programs. Apart from the broadcasting organizations which are subject to "Laender" Law, there are two organizations which are subject to Federal Law:

- a) Deutsche Welle for shortwave broadcasts to foreign countries in German and other languages to the Far, Near and Middle East, Africa and the Americas.
- b) Deutschlandfunk provides longwave broadcasts to give a comprehensive picture of Germany in broadcasts for Germany and other European countries.

Broadcasting transmitters may be installed and operated by the broadcasting organizations only by permission of the Federal Minister of Posts and Telecommunications. Orders included in the permission, which also contain "Technical Directions", ensure that technical installations operated by the broadcasting organizations do not interfere with other telecommunication services. In the same way, it is ensured that the provisions of the International Telecommunications also assigns the frequencies for the emission of broadcasts from the transmitting installations of the broadcasting organizations.

The broadcasting organizations are responsible for:

- programmes,
- studio engineering,

- technical installations for the sound broadcast transmitters except for the transmitters used by the "Deutschlandfunk" and the "Deutsche Welle" (these transmitters are installed and operated by the Deutsche Bundespost).

The Deutsche Bundespost is responsible for:

- sound and TV circuit network,
- TV transmitter networks for 2 programmes at present, except for the TV transmitters of the broadcasting organizations belonging to the Association of Broadcasting Organizations of the Federal Republic of Germany incorporated under public law (ARD) - first German Television Programme - (these transmitters are installed and operated by the broadcasting organizations).

It might be noted that the chartered broadcasting organizations are loosely banded together into an Association (ARD), an alliance established in August 1950. The ARD provides a mechanism for cooperation among the state systems in programming, technical and legal matters. Through ARD the members cooperate in legal matters, in the financing of overall operation and in other areas where common interests will be served.

#### Other Special Considerations

Coast stations for the maritime radio service (public telegram and telephone service, radio service for ships in distress, radio direction finding service) are established and operated by the Deutsche Bundespost.

The stations at airports working for the air traffic control service are established and operated by the Federal Institution for Air Traffic Control (Bundesanstalt fur Flugsicherung).

Radio installations on board ships and aircraft have to comply with the relevant technical specifications. The establishment and operation of such installations has to be authorized by the Deutsche Bundespost. The same applies to coast stations for the port operations service which are established and operated by the Waterways and Shipping Department, and to stations at airports.

Certificates for the staff operating the coast and aircraft stations are issued by the Deutsche Bundespost.

#### CONTEMPORARY ISSUES

At present, plans are being drafted to reorganize the Deutsche Bundespost with the aim of giving it even more independence.

INDIA

PRIMARY INFORMATION

Total Telephones..... 1,057,193

Telephones per 100 Population..... 0.20

Per Cent Automatic..... 100.0

Telecommunication Carriers

Domestic Telecommunications..... ( Ministry of Information, Broadcasting and  
Communications

( Department of Communications

( Posts and Telegraphs

International Telecommunications.... ( Ministry of Information, Broadcasting and  
Communications

( Department of Communications

( Overseas Communications Service

Regulatory Environment (Telecom)..... ( Government

( Ministry of Information, Broadcasting and  
Communications

Broadcasting..... ( All-India Radio

Regulatory Environment (Broadcasting)..( Government

( Ministry of Information, Broadcasting and  
Communications





INDIAThe Provision of Telecommunications Services

All public telecommunications services within this country are provided by the Posts and Telegraphs Department, which comes under the administrative control of the Government of India in the Department of Communications of the Ministry of Information, Broadcasting and Communications. For the establishment of any private telecommunications services, the Posts and Telegraphs Department has the right of "first refusal"; i.e. another government department or a private organization can only set up a system to provide a telecommunications service if the Posts and Telegraphs Department declines to do so.

Apart from defence telecommunications there are two major telecommunications systems operated by government agencies other than the Posts and Telegraphs Department; namely, All-India Radio, which engages in radio broadcasting and limited television broadcasting, and Indian Railways, which serves its own operational needs. Public telecommunications services with other countries are provided by Overseas Communications Service, which like the Posts and Telegraphs Department is under the administrative control of the Department of Communications.

The major telecommunication services provided are telephone, telegraph, Telex, Phototels, and private leased circuits.

The following figures give some overview of the growth pattern for these public services and the overseas services.

Fig. 1

POSTS AND TELEGRAPHS DEPT.

Only limited information is available.

Telegrams - Increased 96% between 1948 and 1968.  
A reduction of 4.5% in 1969 was foreseen  
as compared to 1968.

Telephone calls - Increased 1330% between 1948  
and 1968. An increase of 16% in 1969 over  
1968 was predicted.

Telex machines - Increased during 1967-68 from  
14 to 24. No traffic data available.

Project growth next 5-10 years

It is likely that as more telephone and telex services become available, the telegraph service may continue a downward trend as indicated above.

An annual rate of growth of 15% for telephone service would appear reasonable taking into account the economy of the country and the ability of the Posts and Telegraph Department to incur expansion costs and the ability of subscribers to afford the service even if it was available.

Fig. 2

AVERAGE GROWTH

Overseas Communications Service - 1964 to 1969

<u>Gross Revenue</u>	approx. 15% per annum
<u>Radio telegraph messages</u>	3.3% per annum
<u>Radio telephone</u>	17% per annum
<u>Radio photo</u>	8% per annum
<u>Telex</u>	38% per annum
<u>Leased Circuits</u>	5% per annum

Projected growth next 5-10 years

Data not available. It would appear that the above average rates can be expected, particularly in view of plans to operate via satellite with consequential service improvement compared to the present HF radio circuits.

Jurisdiction

Under the Indian federal system, telecommunications are exclusively under the jurisdiction of the Central Government. The Indian Telegraph Act, 1885, and the Indian Wireless Telegraphy Act, 1933, give the Central Government of India power to control and regulate all telecommunication services including Radio and TV broadcasting.

The Telegraph Act provides very wide powers to control and regulate all telecommunications services because it defines:

"Telegraph" as any appliance, instrument, material or apparatus used or capable of use for transmission or reception of signs, signals, writing, images and sounds or intelligence of any nature by wire, visual or other electro-magnetic emissions, radio waves or Hertzian waves, galvanic, electric or magnetic means.

Accordingly, it would embrace all methods of telecommunication including telephone, facsimile, etc., etc.

The powers vested under the Act provide that the Central Government, shall have the exclusive privilege of establishing, maintaining and working telegraphs (see previous definition).

### The Regulatory Situation

The Department of Communications of the Government of India is responsible for the control and regulation of telecommunications within the country and overseas. Information concerning the financial operation of the Posts and Telegraphs Department is contained in its Annual Report.

Government of India, Ministry of Information, Broadcasting and Communications appears to directly control and regulate All-India Radio (Radio and TV) including programming.



The Department of Communications of the Ministry controls and regulates telecommunications within the country and overseas; this then includes:

1. Inland services through its Department of Posts & Telegraphs;
2. Overseas Services directly;
3. Fixed & Mobile Radio services through the Wireless Planning and Co-ordination Wing of the Department of Posts and Telegraphs.

#### Details of Regulation and Control

Public Telecommunications Service -(Inland). These services are provided by the Posts and Telegraph Department under control and regulation of the Department of Communications of the above Ministry.

Overseas Telecommunications Service. These services are provided by the Overseas Communications Service (headquarters in Bombay), under the control and regulation of the Department of Communications as an entity apart from the Inland Posts & Telegraph Department.

The Satellite communications Earth Station comes under the Overseas Communications Service.

Private Telecommunications Services. Under the control and regulation of the Department of Communications, the Posts &

Telegraphs Department has the right of "first refusal" to provide private services. Other government departments or private organizations can only establish private service arrangements if the Posts & Telegraphs Department declines to do so.

Public Broadcasting Services. All Radio and limited TV broadcasting services are provided by All-India Radio, a government entity coming under the control of the Government through its Ministry of Information, Broadcasting and Communications, separate from the telecommunication carrier i.e. the Posts and Telegraphs Department. Since both come under the same Ministry of Government no problems are evident with regard to their respective regulation and control. Program content is responsive to government influence. Suggestions that All-India Radio be converted to a statutory corporation have been shelved in favour of the present arrangement for the time being.

Railway Operational Service. It is operated by Indian Railways as a separate government agency to suit its operational needs.

The Railway is obliged under the Indian Telegraphs Act to make rights-of-way and access available to the Posts and Telegraphs Department.

Radio Services. These services are regulated by the Government through the Wireless Planning and Co-ordination Wing of the Department of Posts & Telegraphs of the Department of Communications,

under the Indian Telegraphs Act (1885) and the Indian Wireless Telegraphy Act (1933).

Posts and Telegraphs Board. A Posts and Telegraphs Board is chaired by the Director General of the Posts & Telegraphs Department, who is also the Secretary of the Department of Communications in the Ministry of Information, Broadcasting and Communications. The level of this position is said to be equal to Deputy Minister in Canada.

The Board is responsible for the development, maintenance and expansion of Postal, Telegraph, Telephone and Wireless communications.

Its work is also related to wireless licences and it discharges certain agency functions with respect to the Government Savings Bank, National Savings Certificates, Postal Life Insurance Policies and the collection of customs duty on postal articles.

The Board consists of:

Chairman (Director General)

Senior Member (Finance)

Senior Member (Posts)

\* Senior Member (Telecoms. Operations)

Member (Banking & Insurance)

\*\* Member (Telecoms. Development)

Member (Administration)

\* In charge of matters relating to traffic, rates and tariffs, maintenance of telecom. assets and all telecom. staff and establishment matters.

\*\* In charge of Planning Development on the telecom. side and P. & T. Civil Wing.

The constitution of the Posts and Telegraph Board provides for the establishment of Sub-Boards to deal with matters concerning only one particular branch with a view to expedition of work.

Decisions taken in such Sub-Boards are to be reported to the parent Board for information.

Three Sub-Boards have been set up:

1. Postal Sub-Board
2. Telecom. Sub-Board
3. Workshops Sub-Board

Changes in rates that have been set for services are dealt with as part of the Central Government annual budget.

Conditions of service establishment and satisfactory economic performance

An Efficiency Bureau has been set up under the Posts and Telegraphs Board with the primary object of improving performance of service and effecting economies. Its activities include studies upon which the calculation of return on investment will be based.

A substantial deficit occurred in the department during 1967-68. The budgeting and financing is quite complex, involving several different funds, for example the Renewals Reserve Fund, Capital Reserve Fund and the Revenue Reserve Fund. The Renewals Reserve Fund appears to be a depreciation sinking fund to provide for re-habilitation of assets and the costs of assets sold or abandoned without being replaced.

The accounting function relative to telecommunications was taken over by the Department from the Government's Audit Department. It envisages a profit and loss account prepared in connection with commercial operation of the Posts & Telegraphs Department.

In view of circumstances attending the non-competitive provision and operation of service by Government, it is unlikely that there is much compulsion to achieve the equivalent of regulation through rate controls, adequacy of service, etc. The service itself can only be provided to the extent funds are available for the purpose. The agency is fully accountable to the Government.

#### The Regulatory Approach

The approach followed in the regulation, operation and development of telecommunications facilities in India is that of a government department. Public service is the prime motivation, although the Posts and Telegraphs Department operates on a commercial accounting basis. Technological innovation has tended to be relatively slow, but this can be attributed to the economic situation in India as much as the nature of the telecommunications system itself.

Direction and control of all telecommunications development, operations, planning, tariffs, financing, administration is contemplated.



Control and direction of a substantial sector of telecommunications equipment manufacturing is evident through Government ownership of the Indian Telephone Industries Ltd. and the Hindustan Teleprinters Ltd., both of which have achieved some exports in addition to inland supply. Telecommunication Workshops produce equipment for the inland service.

It would appear that the Indian philosophy envisages strict licensing measures relative to radio services (operators and station operations) in accord with I.T.U. Regulations; strict control of Radio and TV programming; control and consequent development of its own manufacturing and the provision by Government of all special telecommunications services for aviation, marine, etc. purposes.

Technological development is relatively slow due to the general economic situation. Major programs are being advanced from the IBRD (\$55 million) and CIDA (\$40 million). An earth station project also enjoys assistance from CIDA.

The standard of services throughout the country is generally comparable to the standard of other kinds of services.

The long distance telephone services, including direct subscriber dialing in some cases, are available but are well below Canadian standards.

Rates for telegrams are much lower than for telephone service.

## Special Considerations

### Management of Radio Frequency Spectrum

Management of the radio frequency spectrum is the responsibility of the Wireless Planning and Coordination Wing of the Department of Communications, which has full control over the allocations of frequencies for any purpose within the country.

Control is exercised over the allocations of frequencies for any purpose within the country under a system of detailed licensing. The possession of wireless telegraphy apparatus is also regulated under a system of licensing. Frequency tolerances and other technical features of transmitting equipment are to be in accord with ITU Radio Regulations.

### Broadcasting

All public broadcasting services are provided by All-India Radio, which comes under the administrative control of the Government of India in the Ministry of Information and Broadcasting, and program content is responsive to government policy. It has been suggested from time to time that All-India Radio should be converted into a statutory corporation, but it was recently announced that the government had decided to maintain the present arrangement, at least for the time being. The relationship between regulation and control of public telecommunication services and public broadcasting services does not appear to present any problem, since both are carried out under the same Ministry of Government.

### Special Services

The Government assumes the full responsibility for establishing any special telecommunications facilities, e.g. aviation, marine communications, etc.

### Contemporary Issues

The role assumed by the Department of Atomic Energy vis-a-vis satellite communications may have resulted in some friction with the Department of Communications and other interested branches of Government. Long term planning in this field is now being conducted by a new high level committee chaired by the Secretary of Communications.

JAPAN

PRIMARY INFORMATION

Total Telephones..... 20,525,211

Telephones per 100 Population..... 20.12

Per Cent Automatic..... 93.6

Telecommunication Carriers

Domestic Telecommunications..... ( Nippon Telegraph and Telephone Public Corporation (NTT)

( Various rural "wire broadcast" telephone companies

International Telecommunications.... ( Kokusai Denshin Denwa Co. Ltd. (KDD)

Regulatory Environment (Telecom)..... ( Government

( Minister of Posts and Telecommunications

Broadcasters..... ( Broadcasting Corporation of Japan

( Private Broadcasters

Regulatory Environment (Broadcasting)..( Government

( Minister of Posts and Telecommunications

( Consultative Committees





JAPANThe Provision of Telecommunication Services

In Japan, telegraph and telephone services have been offered, for the past 95 and 75 years respectively, under some form of government management. In 1885, the Ministry of Communications was established and telecommunications came under its administration. In June, 1949, after the end of the second world war, the Ministry of Telecommunications was divided into two Ministries; Postal Services and Telecommunications.

On August 1, 1952, the Ministry of Telecommunications was reorganized into the 'Nippon Telegraph and Telephone Public Corporation (NTT).' At the same time, the administrative part of the Ministry of Telecommunications was transferred to the Ministry of Postal Services which was renamed the Ministry of Posts and Telecommunications (MPT).

In April 1953, the International Section of the NTT was reorganized into the 'Kokusai Denshin Denwa Co., Ltd. (KDD)'. Since then, domestic communications have been served by NTT and international communications by KDD.

In the area of domestic telecommunications, besides the NTT, there are a number of "Yusen Hoso Denwa" or wire broadcast telephone companies in rural areas which are operated by local public agencies such as municipal or co-operative bodies. The instrument

of the "Yusen Hoso Denwa" is used to transmit simultaneously information to every house subscribing to the system. Between broadcast periods the instrument is used as a telephone. Some of the systems have partial access to the NTT telephone network.

#### The Nippon Telegraph and Telephone Public Corporation

The NTT is a public corporation, established by the Nippon Telegraph and Telephone Public Corporation Law and is owned by the Government.

Article 1 of the Law identifies the purpose of the NTT as:

The Nippon Telegraph and Telephone Public Corporation shall hereby be organized, the purpose of which is to establish a system for rational and efficient management of the public telecommunication enterprise, expedite the consolidation and expansion of public telecommunication plants, ensure the people's convenience provided by telecommunications, and thereby promote the welfare of the public.

The main telecommunication services provided by the company are telephone, Telegraph, Telex, and leased circuits.

#### The Kokusai Denshin Denwa Co. Ltd.

The KDD is a joint stock company, which was created to operate the public international telecommunication services. The shares of the company may only be held by the Government, local public entities, or Japanese national or Japanese juridical persons.<sup>1</sup>

1. Kokusai Denshin Denwa Company, Ltd. Law,  
Article 4. Telecommunication Laws of Japan, p. 171

The major services it provides to users are telephone, telegraph, telex, and leased circuits.

### General Information

Some indication of relative importance of the telecommunications companies is indicated in the following two tables which indicate the recent annual gross revenues and the percentage growth in services for the past decade.

Fig. 1

### Gross Annual Revenue (Hundred Million Yen)

<u>Organization</u>	<u>Fiscal Year</u>		
	<u>1966</u>	<u>1967</u>	<u>1968</u>
NTT	5,961	7,005	8,094
KDD	187	216	248
* WBT	130	145	166

\* Some agencies, including those whose business year ends between April 1 and November 30 are excluded.

Fig. 1

Average Growth Rate Per Year  
in the Past Decade

	Telephone Subscriber Lines	15.1%
NTT	Telegrams Sent	-2.1%
	Telex Lines	39.3%
	Telephone Calls	22.7%
KDD	Telegrams Sent	4.8%
	Telex Calls	28.8%
WBT	Subscriber Lines	21.9%

It is not expected that the subscribers to the wired broadcast system will increase any further in the future. The NTT expects that its 1969 level of subscribers of 13 million will reach 36 million by the end of 1977.

Jurisdiction

The jurisdiction over telecommunications rests with the government. Since the 1952 reorganization, the Ministry of Posts and Telecommunications has had the exclusive power to regulate or control telecommunications.

The major laws concerning the regulation of telecommunications are:<sup>2</sup>

1. The Radio Law
2. The Broadcast Law
3. Wire Communications Law
4. Wire Broadcast Law
5. Law regarding regulation of the operation of wire broadcasting service
6. Nippon Telegraph and Telephone Public Corporation Law
7. Kokusai Denshin Denwa Company Ltd. Law
8. Public Telecommunications Law
9. Law regarding interim arrangements for the expansion of telegraph and telephone facilities.

#### The Regulatory Situation

In Japan, the regulatory situation is characterized by direct government control, through the Minister of Posts and Telecommunications, over the operating telephone companies. The Minister, along with the eleven other cabinet ministers, is responsible to the Diet.

2. For an English Translation of Laws referred to in Items 1, 2, 3, 6, 7, and 8 see: Telecommunication Laws of Japan, Kokusai Denshin Denwa Co. Ltd. Tokyo, 1967.



Powers and Functions of Ministry of Posts and Telecommunications

Principal functions and powers of the Ministry of Posts and Telecommunications are as follows:

1. Government Undertakings:

- a) Mail Service;
- b) Postal saving, money order and transfer service;
- c) Post office life insurance and annuities service;

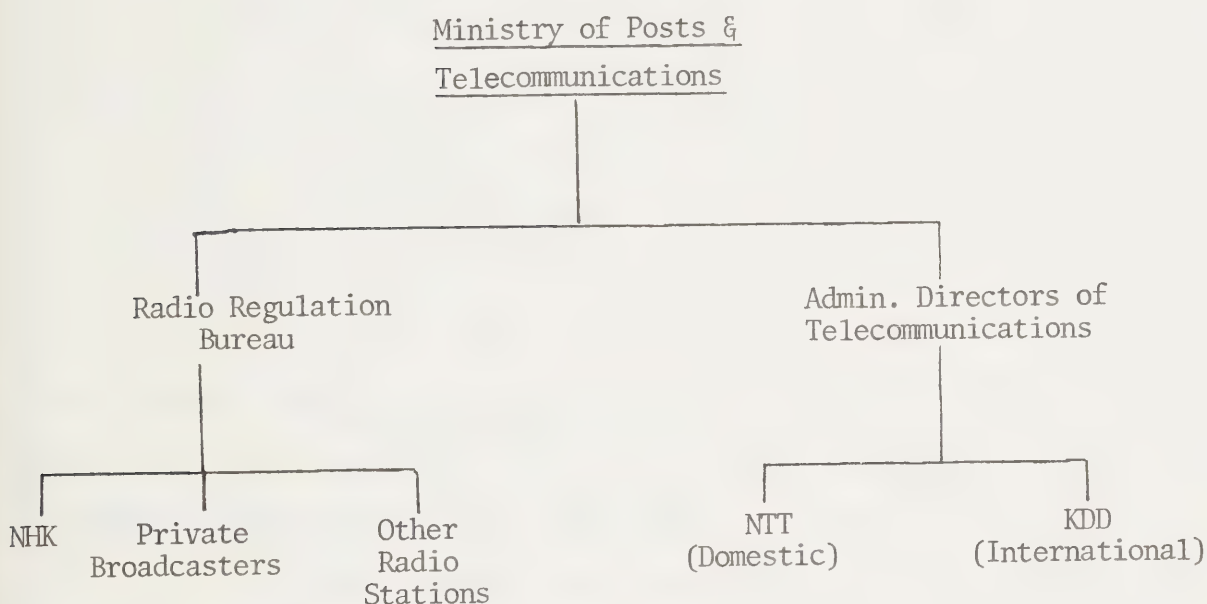
2. Administrative Affairs:

- a) Radio administrative affairs;
- b) Telecommunication administrative affairs, excepting those related to radio, which are:
  - i) To supervise the Nippon Telegraph & Telephone Public Corporation (Japan's exclusive system for domestic telegraph and telephone) and the Kokusai Denshin Denwa Co., Ltd. (Japan's overseas radio and cable system);
  - ii) To regulate and control wire telecommunications;
  - iii) To negotiate and conclude, within the limits as provided for by laws and regulations, international agreements relating to the control of international telecommunications excepting the regulation of radio waves and broadcasting; and keep contact with the International Telecommunication Union and other various organs.

The functions mentioned in a) are mainly vested in the Radio Regulatory Bureau, and those mentioned in b) mainly in the Administrative Directors' Office of Telecommunications.

Fig. 3

Relationship between Organizations



The Regulatory Approach

The Minister of Posts and Telecommunications, unlike an administrative commission which has quasi-legislative and judicial powers independently from the government, regulates and supervises telecommunications in conformity with the Constitution and laws under the Cabinet.

The Regulatory policies on important telecommunications problems are made, taking into account the reports from the Posts and Telecommunications Advisory Council consisting of members representative of the public.

#### Regulation of NTT

The principal parts of the rates and the terms and conditions of services are fixed by law and the others are fixed by NTT with the authorization of the Minister of MPT. Besides NTT prepares and submits a budget for each business year (April 1 to March 31) to the Minister of MPT together with a business program and a financial program for the business year and other documents concerning matters serving as references for the said budget, upon receipt of which the Minister of MPT makes necessary adjustments consulting with the Minister of Finance and obtain decision of the Cabinet meeting. After the decision by the Cabinet, it submits for approval the said budget to the Diet at the time of submission of the state budget.

Other major financial activities such as the settlement of accounts, the inventory, balance sheet, profit and loss statement, need authorization of the Minister of MPT.

#### Regulation of KDD

The major terms and conditions of services are fixed by law and the rates and the detailed terms and conditions of services are fixed by KDD with the authorization of the Minister of MPT. In

addition other major financial activities such as issue of new shares or debentures, disposal of profits or important telecommunication facilities and a business program for each business year (April 1 to March 31) need authorization of the Minister of MPT.

#### Regulation of WBT

With respect to the Wire Broadcast Telephones, the establishment in use of these systems is also under the direct regulatory control of the MPT. Any person intending to establish a WBT must give intentions to the Minister of Posts and Telecommunications. Furthermore, he must observe technical standards and the plant and equipment is subject to inspection by an officer of the Ministry. In general, the rates, terms and conditions of service are subject to notification to the Minister.

#### Special Considerations

#### Management of the Radio Frequency Spectrum

The Radio Regulations Bureau of the MPT has responsibility for management of the radio frequency spectrum. Principle powers and functions of the Radio Regulatory Bureau are as follows:

1. To negotiate and conclude, within the limits as provided for by laws and regulations, international agreements relating to the regulation of radio wave and broadcasting; to keep contact with the International Telecommunication Union and other various organs;

2. To grant a licence for, or approve the establishment of a radio station;
3. To establish technical standards for radio equipment;
4. To inspect radio stations concerning their radio equipment, the qualification and number of operators, etc.;
5. To monitor and regulate radio waves;
6. To determine the standard frequency value; to emit the standard frequency wave; and to inform the standard time;
7. To make the forecast concerning the propagation of radio waves and to issue the warning concerning the derangement in radio wave propagation;
8. To conduct the State examination for radio operators and to grant radio operator licences;
9. To conduct, on request, the performance test of radio equipments; the type approval test and calibration of devices used therein;
10. To measure, on request, the frequency of radio stations;
11. To supervise the Japan Broadcasting Corporation;
12. To regulate the Wire Broadcasting Service.

The fundamental policy of radio administration is to promote the public welfare by ensuring the fair and efficient utilization of radio waves; and as to the broadcasting, in addition to the above, to regulate broadcasting so as to meet the public welfare and to strive for the sound development thereof.



And under the conception that the radio waves are the property of the nation, the up-to-date state of frequency assignments and assignable frequencies are made public to the users, and the use of frequencies is offered to the general public.

### Regulation of Broadcasting

In Japan, the regulation of broadcasting both in terms of programming and technical standards is the responsibility of the MPT.

Programming criteria for broadcasters, both the Broadcasting Corporation of Japan and private broadcast stations, are set out in legislation.<sup>3</sup> The Broadcast Law also requires, as a means of controlling programming that:

"The Corporation shall, for the purpose of maintaining the appropriateness of the broadcast programs of the domestic broadcasting, have the Central Broadcast Program Consultative Committee..... and District Broadcast Program Consultative Committees .....

The Central Consultative Committee and the District Consultative Committee may, if he deems necessary for the maintenance of the appropriateness of the broadcast programs of the domestic broadcasting, state their views to the president .....

When the Broadcasting Corporation intends to establish or change the Standards of Domestic Broadcast Programs, the President must consult the Central Consultative Committee. Private Broadcasters must also have a broadcast program consultative organization.

3. The Broadcast Law, Law No. 132 of May 2, 1950  
Articles 44 through 46.

### Government Telecommunication Facilities

Radio stations used for safety services such as coast stations, aeronautical stations, radio navigation facilities etc., are established and operated by the Ministry of Transportation.

### Contemporary Issues

The Ministry of Posts and Telecommunications considers it is pressing, at the threshold of the post-industrial society, to consolidate the administrative machinery to cope with the increasing requirements for planning and coordination in the field of telecommunications and it is taking the necessary steps to do so.

The issues which are of current concern are:

1. Institutional consolidation for the use of data transmission facilities and the operation of that service.
2. Rationalization of the rates of public telecommunication services in the light of the recent changes in the relative cost of factors and in the relative weight of utilization of different services.

KENYA

SUMMARY INFORMATION

Total Telephones..... 65,166

Telephones per 100 Population..... 0.63

Per Cent Automatic..... 84.3

Telecommunication Carriers

Domestic Telecommunications..... ( East African Posts and Telecommunications  
Corporation (E.A.P.&T.)

International Telecommunications.... ( East African External Telecommunications  
Company Ltd.

Regulatory Environment (Telecom)..... ( East African Authority  
( Communications Council

Broadcasters..... ( Voice of Kenya

Regulatory Environment (Broadcasting)..( Government  
( Ministry of Information and Broadcasting



KENYAThe Provision of Telecommunication Services

All telecommunications services other than radio and television broadcasting are provided in Kenya and also in Uganda and Tanzania by the East African Posts and Telecommunications Corporation. (E.A.P.&T.). The Corporation is fully owned by the governments of the three participating countries through the East African Community. The internal telecommunications system of East Africa is linked with other countries by East African External Telecommunications Company Limited which is jointly owned by East African Posts and Telecommunications and by the British firm Cable and Wireless.

East African External Telecommunications operates both cable and radio links with Europe and some neighbouring African countries and will shortly begin to operate a communications satellite receiving station. East African Posts and Telecommunications provides a variety of services, most important of which are the following: postal service, telephones, radio telephones, telex, other transmission facilities for telecommunications users, e.g. East African Directorate of Civil Aviation and East African Meteorological Department.

Aside from the postal service, the telephone service is the largest source of revenue to E.A.P.&T. The demand for telephones is very high. The system has expanded rapidly and the expansion is continuing but it is apparently difficult to keep pace with the growth of demand.



### Jurisdiction

Control over Posts and Telecommunications as well as over other services common to the three East African countries is exercised by the East African Community. This supra national body inherited its responsibilities from the former East African Common Services Organization which was established by the British during the colonial period.

The constitution of the Community is the Treaty for East African Co-operation which was signed at Kampala, Uganda on June 6, 1967 and which came into force on December 1, 1967.

The Treaty and its annexes form the legislation covering the provision of and control of all telecommunications services.

### The Regulatory Situation

The Treaty provides that the Posts and Telecommunications Corporation will report through a Board of Directors to the Communications Council. The Board of Directors is composed of a Chairman appointed by the Authority (the Presidents of the three member states), the Director General of the Corporation and six other members, three of which are appointed one each by the partner states, the remaining three being appointed by the Authority.<sup>1</sup>

1. Treaty for East African Co-operation, June 1967, Article 74.

The Communications Council consists of the three East African Ministers (of Communications, Research and Social Services, of Finance and Administration, and of the Common Market), and of nine other persons, 3 nominated by each partner state all being Ministers of those states and including the Ministers responsible for telecommunications matters in the national governments. The Communications Council in turn reports to the East African Authority which is made up of the Presidents of the three member states. The scope of the authority of the Director General, Board of Directors, the Communications Council and the authority in the control of telecommunications is set down in Annex 13 of the Treaty.

The governments of the member states are free to set up their own systems of liaison with the Community on matters such as telecommunications which are primarily Community responsibilities. The Kenya Government maintains a Community Secretariat in the Office of the President and the East African Minister appointed by the President of Kenya; the Minister for Finance and Administration, also maintains an office in the Office of the President. The Kenya Minister of Power and Communications is, of course, one of the Kenyan representatives on the Communications Council, and has in his ministry several civil servants who look after telecommunications matters and co-ordinate their work with the Corporation and with the Community Secretariat in the President's Office.

Other Ministries having interest in some telecommunications matters such as the Ministry of Foreign Affairs and the Ministry of Information and Broadcasting also work with the Ministry of Power and Communications, and with the Community Secretariat in the President's Office. This machinery exists to ensure that the Kenyan interests are identified to and put forward in the Communications Council by the Kenyan representatives on the Council.

#### The Regulatory Approach

The Posts and Telecommunications Corporation itself and the Communications Council of the East African Community are basically responsible for the control or regulation of telecommunications. The basic principles of operation of the Corporation are defined in Article 72 of the Treaty for East African Co-operation as follows:

"It shall be the duty of each of the Corporations to conduct its business according to commercial principles and to perform its functions in such a manner as to secure that, taking one year with another, its revenue is not less than sufficient to meet its outgoings which are properly chargeable to revenue account, including proper allocations to the general reserve and provision in respect of depreciation of capital assets, pension liabilities and interest and other provision for the repayment of loans and further to ensure that, taking one year with another, its net operating income is not less than sufficient to secure an annual return on the value of the net fixed assets in operation by the Corporation of such a percentage as the Authority may from time to time direct".

Whether or not the performance of the Corporation is satisfactory is determined by comparing its financial results with the ideal results set down in these principles of operation. The Corporation is exempt from income tax and from stamp duty.

Expansion of the telecommunications system which cannot be financed from the Corporation's revenues is usually arranged through the World Bank. The Corporation is empowered to borrow money directly but the loans are guaranteed by the three partner states. Such loans are arranged by the Corporation Board and by the Community, Minister for Communications and the Communications Council. When a large loan is needed to cover an important phase of the Corporation's development program, permission to arrange the loan would normally be obtained from the Authority.

The Corporation reports its annual results to the East African Community by submitting its accounts each year to the Community Auditor General who certifies the amounts and reports on them. The accounts and report are then submitted to the Communications Council which passes them on to the East African Legislative Assembly.<sup>2</sup> At the same time the Board of Directors submits to the Communications Council an annual report on the work of the Corporation which is then transmitted to the Assembly with the statement of accounts and report of the Auditor General.

2. Ibid., Articles 56-60.



The rates for telecommunications services are determined by the Board of Directors and by the Communications Council. The Board of Directors is able to approve any alteration in the tariff of a service which would not affect the gross revenue of the service concerned to an extent greater than 2%. Any greater change of tariffs must be approved by the Communications Council. Adequate service by the Corporation is ensured as far as is possible by pressure being placed on the Corporation both directly and through the Communications Council by the governments of the partner states who wish to ensure that government agencies and private organizations in each country are receiving the telecommunications services they require. The speed of expansion and quality of services provided by the Corporation are limited by financing available to it and the lack of trained African personnel.

The general philosophy behind the system of regulation of telecommunications service is to provide a commercially viable service which will be able to expand as quickly as is necessary to meet the growing demand for telecommunications services. Individual governments can, if they wish, decide to provide non-economic services in rural areas by subsidizing the Corporation from the National Government budget to provide the service requested. The Uganda Government is currently taking this course of action as part of its rural development program.



It appears that the system of regulation of the telecommunication system does not operate as well as it might. Even though the official results of the Corporation may appear satisfactory, the results in terms of service fall short in some respects. This may be partially due to a very low rate structure for telephone usage. It costs approximately \$3.25 to rent a telephone per month and local calls are then charged at .04¢ each. However, to obtain a telephone it may take a subscriber up to two years. The Corporation does not have the capital available to purchase necessary equipment nor does it have the capability in personnel to install and maintain it.

The difficulty of obtaining trained African personnel to replace expert personnel who have left the Corporation, may have an adverse effect on the standard of service provided by the Corporation. It should be noted, however, that in an effort to advance technology and to improve long distance communications, the Corporation has introduced direct distance dialing in East Africa and is planning a microwave system from Kampala - Nairobi - Mombasa - Dar-es-Salaam.

It is evident to agencies working closely with the Posts and Telecommunications Corporation, that the issue of adequate engineering manpower is a vital one.

## Special Considerations

### Management of Radio Frequency Spectrum

The radio frequency spectrum is managed by the Corporation through its Service Department and a licensing officer. A private company or individual who wishes to establish any sort of radio service has to apply to the Service Department of the Corporation. The Service Department then determines whether or not the service requested could be provided by the Corporation. If the applicant cannot produce good reasons why the services provided by the Corporation would not be sufficient to meet his needs, his application will be turned down. If the Service Department decides that the applicant has presented a good case for the establishment of a private telecommunications facility they will pass the application on to the licensing officer. The licensing officer will assign a suitable frequency to the applicant and issue him with a proper license.

National government agencies and other Community agencies having their own telecommunications and networks will go directly to the licensing officer for the allocation of their frequencies. These users include, for example, the Kenya Army, Kenya Police, East African Directorate of Civil Aviation.

## Broadcasting

Public broadcasting is under the control of the national governments rather than of the Community. National broadcasting services will consult with the Corporation's licensing officer on frequency allocation but the determination of program content and technical standards is entirely up to the Kenya government through the Ministry of Information and Broadcasting. The broadcasting service, the Voice of Kenya, is an integral part of the Ministry of Information and Broadcasting.

## Contemporary Issues

The Posts and Telecommunications Corporation has an ambitious development plan which has been approved by the World Bank and for which financing was made available by the Bank. This program includes the provision of the microwave system referred to above, the expansion of telephone service through the purchase of new exchanges and ancillary equipment and the expansion of secondary intercity services in East Africa through the installation of tropospheric scatter radio systems. This program represents an ambitious attempt to meet a very high demand for good quality telecommunications services. The Posts and Telecommunications development program is intended to greatly improve the telecommunications services available to governments and private users in East Africa; however, it is thought in some quarters that the Corporation should take steps to improve its

personnel situation, in order to avoid the danger that the quality of telecommunications service should actually decline rather than improve over the next few years.

MEXICO

PRIMARY INFORMATION

Total Telephones..... 1,174,943

Telephones per 100 Population..... 2.44

Per Cent Automatic..... 92.0

Telecommunication Carriers

Domestic Telecommunications..... ( Federal Ministry of Communications and  
Transport (SCT)

( Telefonos de Mexico

( Concessionaire Telephone Companies

International Telecommunications.... ( Federal Ministry of Communications and  
Transport

Regulatory Environment (Telecom)..... ( Government

( Ministry of Communications and Transport

Broadcasting..... ( Telesistema Mexicano

( Other private broadcasters

Regulatory Environment (Broadcasting)..( Government

( Ministry of Communications and Transport

( Ministry of the Interior





MEXICO

The Provision of Telecommunications Services

All telecommunications services in Mexico with the exception of land telephone and radio and television broadcast services are provided by the Federal Ministry of Communications and Transport (Secretaria de Comunicaciones y Transportes) or SCT. Telephone service is provided by Telefonos de Mexico, S.A., a private corporation and holder of a federal government concession which expires in 1973. It serves 98 per cent of Mexican telephone subscribers.

The shares of Telefonos de Mexico are owned apparently, to the extent of about 30 per cent, by the Federal Government. This figure is variable but seems to be increasing.

The ownership of broadcasting facilities is also difficult to ascertain. The major television corporation is Telesistema Mexicano, S.A., which appears to have mixed ownership. Few television stations stand outside this Corporation.

The SCT provides Telex service both within Mexico and between Mexico and foreign countries. This service is directed to special users, which now number about 3,600, but public telex facilities are being installed in major cities. Telegraph service

which includes a telegraphic money order service is provided to the public by the SCT. The SCT also provides maritime radio-communications. In addition the SCT on occasion rents or loans to Telefonos de Mexico some of its transmission facilities and thereby indirectly also assists in providing telephone service.

Transmission is carried out by a current-carrier system, by coaxial cable, by high-frequency radio, and by microwave. The nature of Mexico's terrain is such as to favour the use of this latter system and it is being increasingly used to carry telegraphic, telephone and telex services. In addition, communication with Europe is now carried out by means of satellites through the Mexican ground station at Tulancigo which is owned and operated by the SCT.

The microwave system is being increasingly used to carry telegraphic, telephone and telex. It was the installation of this system which has been the most outstanding development in the provision of telecommunication services in Mexico in the past five years. This system is now almost fully installed. Most sections of it are complete. According to some reports it is being used to only 5 to 10 per cent of capacity. However, it is possible that it will be used up to 50 per cent of capacity within a few years. The new federal administration, which will assume power in December, 1970, will probably make some effort to bring smaller towns into the main national telecommunications

network. However, programs of expansion, in this as in other domains in Mexico, are based on the priorities established by a President at the beginning of his tenure of office. Consequently, the degree and type of expansion in Mexican telecommunications over the next five years will not be known until that time.

### Jurisdiction

The regulation and control of telecommunications in Mexico is characterized by a high degree of centralization. Neither states nor local authorities have any power in this field. The Federal Government alone, through the SCT, is responsible for the granting of licences and concessions for the operation of radio and television stations, the establishment of telegraphic, telephone and cable services, and is the authority responsible for the proper functioning of these systems. The main pieces of legislation governing telecommunications are the "Ley de Vias General de Comunicacion", a Federal Law, and that section of the constitution which establishes telecommunications as a monopoly of the Federal Government.

### The Regulatory Situation

Within the Federal Government the SCT is responsible for the control and regulation of communications, with those exceptions connected with broadcasting and which are noted below.

There is no body outside of, or independent of the SCT, which has any responsibility in these matters and, within the SCT, the regulatory function is only one of the many tasks assigned to the Directorate-General of Telecommunications.

The Directorate-General is divided into two sub-directorates which operate almost independently of one another. One is called the Sub-directorate of Permits and Concessions while the other is called the Sub-directorate of Services. The former is concerned solely with the regulation of telecommunications, including those services which are carried out by concessionaires, while the latter body is a purely functional one concerned with operating those telecommunication services provided by the government.

The Sub-directorate of Permits and Concessions has a number of sub-divisions which regulate services provided by concessionaires but do not attempt to regulate the services provided by their sister sub-directorate -- that of Services.

Rates for telecommunications services are set by the SCT within a Directorate-General distinct from that of telecommunications, and entitled Directorate-General of Tariffs. This body may be approached by the Sub-directorate of Services for a change in rates in any of the services it provides. It may also and in fact must be approached by any private concessionaire who wishes a change in rates. In this case the concessionaire



must produce figures to justify its request. The Directorate-General and not the concessionaire has the final word in the matter of rates, and any new rates must be published as part of a Presidential order.

In determining rates the government, through the Directorate-General of Tariffs, places considerable importance on political factors and balances these against economic considerations. The government attempts to ensure that services normally used by persons of low income are available at rates commensurate with the incomes of the low-income group even if such rates mean that services are provided at low cost. The extremely low rates for telegraphic services are an example of the application of this policy. The low rates for domestic telephone service are another example. On the other hand, services such as telex or long-distance telephone not normally used or desired by persons in low-income groups are permitted by the government to charge rates which help to compensate for losses on other services.

When considering any aspect of the Mexican regulatory situation or approach it is essential to keep in mind that there do not exist clear divisions of responsibility between civil service, the cabinet and the legislative branch of government. The lack of clearly defined areas of responsibility between the Government and concessionaires such as Telefonos de Mexico, may contribute to a closer regulation by the SCT than the terms of the concession imply.

Therefore there is, in the relationship with Telefonos de Mexico, something similar to a government agency regulating an autonomous telecommunications entity but Mexican conditions are such that it would seem to be more realistic to consider Telefonos de Mexico as a more autonomous branch of the SCT.

It is difficult to know the extent to which Telefonos de Mexico is regulated by the SCT. Officially the SCT has the right to set conditions of service, to set rates and extent of expansion. Through its financial participation, both in the form of shares owned and loans made to the company, and its strong representation on the board of directors, the government is in a position to influence the normal financial operations of the company and it is believed that government influence extends even to such matters as the hiring of high-ranking personnel and the purchase of equipment.

In the relationship among the private broadcasters there is something more akin to a government-autonomous entity relationship. But here again, as is explained below, there is no clear division of responsibility.

The nature of the responsibility which the regulatory body, that is the Direccion General de Telecomunicaciones of the SCT, has to the government is not clearly definable because the two are not distinct. The granting of a concession may be decided within the Directorate-General, but if important enough, the decision might be made by the Minister or even by the President of the Republic. There are no criteria which determine exactly the boundaries between cases which may be decided within the Directorate-General or within the SCT and those which must be sent to the President.

In the matter of broadcasting technical standards are set by the SCT but other federal government departments have a role to play in determining content.

Rates are set within the SCT with the object of recovering as soon as possible the investments made in equipment. The rates are said to be prohibitively high and the system is being used to only 5 per cent of capacity. Protests from potential users have met with no response.

### The Regulatory Approach

The philosophy which governs the Mexican approach to regulation of telecommunications is directed at keeping this field of activity in Mexican hands and at putting it whenever possible in the hands of the State. Article 28 of the Constitution of the Republic establishes that "In the United Mexican States there will

be no monopolies ..... with the sole exception of those relative to the printing of money, postal service, telegraph service and radio-telegraphy ..... which will be controlled by the Federal Government .....". Thus it is considered in Mexico that telecommunications are, as a matter of right, to be owned, operated and controlled by that Government. Only when the federal government is not in a position to provide a service may that service be provided by an extra-governmental enterprise. When this is done, as in the case of Telefonos de Mexico, the service is provided by virtue of a special concession, the time limit of which is always defined. The concession is never an open one and, in practice the government is more deeply involved in the management of concessions than the official terms of the concession imply.

### Special Considerations

The management of the radio-frequency spectrum is done by a department of the Direccion General de Telecomunicaciones called Departamento de Frecuencias which has complete power in this domain, subject of course to the usual supervision by the Director-General or the Minister.

Broadcasting, like other telecommunications, is considered to be the proper object of a government monopoly but it too is let out on concession to private enterprise. The federal government in this as in other aspects of telecommunication has full regulatory powers. However, the private broadcasters, because they are powerful private businessmen, appear to have a certain degree of autonomy from the government. Nevertheless in 1969 all

broadcasting concessions were limited to ten years with the possibility, written into the law, of a renewal for a second ten-year period.

The regulation of broadcasting is now, however, the exclusive prerogative of the SCT. The SCT is responsible for technical regulation but content is primarily the responsibility of the Interior Ministry (Secretaria de Gobernacion). Broadcast material with an educational content is the responsibility of the Education Ministry and advertising for medical products is overseen by the Ministry of Health.

The SCT has established all special telecommunications facilities in support of maritime navigation. Facilities in support of aerial navigation were established by a private company called RAMSA (Radio Aeronautical Mexicana S.A.). In the past year the Federal Government bought the majority interest in the company.

#### Contemporary Issues

At the present time there is a special high-level commission, directly responsible to the Under-Secretary of Communications and Transport, which is studying the question of data transmission.

There are at present no special facilities for this purpose and such data as is transmitted is now carried on ordinary voice telephone channels. Since there is, for the moment, no body of regulations governing data transmission the SCT turns a blind eye to this informal arrangement.



The main problem facing the commission is to decide whether to opt for the application of CCITT rules and specifications for data transmission and equipment or whether to choose United States standards. There also remains the question of whether data transmission will be carried out on special SCT facilities or entrusted to Telefonos de Mexico. According to one report the latter organization, which has the facilities necessary for transmission, would probably be assigned the job.

Apart from the above there are at this time no apparent plans for changes in the regulation or control of telecommunications. However, because of the highly centralized nature of the Mexican system of government and the powerful role which the President holds in it, planning is based on the period of a Presidential regime rather than on a ten-year period. Any preplanning which is done is necessarily tentative until the new President takes office and decides in what way priorities will be allocated among various departments. This applies as much to any changes which might be made in control and regulatory legislation as it does to plans for physical expansion.

SPAIN

SUMMARY INFORMATION

Total Telephones..... 3,723,239

Telephones per 100 Population..... 11.44

Per Cent Automatic..... 81.1

Telecommunication Carriers

Domestic Telecommunications..... ( Compania Telefonica Nacional de Espana  
(CTNE)

( Direccion General de Correos y Tele-  
comunicaciones (DGCT)

( Empresa Nacional de Telecomunicaciones  
(ENTEL)

( Small private or municipal systems

International Telecommunications.... ( Compania Telefonica Nacional de Espana  
(CTNE)

( Direccion General de Correos y Tele-  
comunicaciones (DGCT)

( Empresa Nacional de Telecomunicaciones  
(ENTEL)

Regulatory Environment (Telecom)..... ( Government

( Ministry of the Interior



SPAIN

The Provision of Telecommunications Services

Organizations Providing Public Services

There are three large organizations in this field who together account for nearly all the telephony and telegraphy services provided in Spain:

- a) Compania Telefonica Nacional de Espana (CTNE);
- b) Direccion General de Correos y Telecomunicaciones (DGCT);
- c) Empresa Nacional de Telecomunicaciones (ENTEL).

In addition there is the small municipal telephone service of the City of San Sebastian and some organizations running coastal radio telephone and telegraph services with fishing fleets. The Spanish National Railroads also provide minor amount of public telegraphic services. Some foreign telecommunication organizations have terminal points in Spain and have entered into arrangements with Spanish organizations with respect to installation and use of international communication facilities.

Ownership of Telephone and Telegraph Services

Exploitation of public telephone and telegraph services is a state monopoly falling within the field of competence of the DGCT in the Ministry of Interior. The DGCT exploits some services (mainly telegraphy) using its own and leased facilities and grants

concessions for others. The two most important concessionaries are the 41% state-owned CTNE, and ENTEL which is owned by the Instituto Nacional de Industria, a state agency for industrial development.

Late in 1967 the government formed an inter-ministerial committee to study the telecommunications industry with a view to making it more adequate for the needs of a rapidly developing economy. Although the report is confidential and no decision on it is said to have been reached as yet, it seems that the principal recommendation is to unify all public telecommunication services under one authority. Implementation of this proposal would require the solution of a variety of difficult political and other problems. Above all the institutional character of the new entity is in question. It is reported that the CTNE favours the idea of an entity which, though controlled by the state, should be run much like a private company.

The company argues that already some 95 percent of the telecommunications traffic goes over its facilities and that it has been exceptionally successful in promoting a very rapid development in Spain's telecommunications system. Above all in the decision-making process and in carrying out large-scale investments an entity with the institutional characteristics of a private company with direct access to the cabinet for approval of major decisions has proven to be very efficacious.



Current indications are that neither the DGCT nor ENTEL are happy with the concept of unification promoted by the CTNE. One of the thorniest problems on which the entities appear to differ is the question of the extent to which telecommunications services should be paid for by their users. A political decision is required to resolve this problem and a number of other ones as well. Only then the institutional characteristics of the new organization for unified provision of telephony and telegraphy services can emerge.

#### Major Telecommunications Services Provided

CTNE. The CTNE enjoys a virtual monopoly in the provision of public telephone services in Spain. These also include telephone services and maritime telephony over medium and long distances. In the field of international communications the company has installed, operates and exploits two important terrestrial stations for satellite communications with countries in the Americas and the East. Submarine cables in operation or under construction connecting Spain with Italy, Britain, the United States, and South Africa are expected to attract a large volume of transatlantic telecommunications traffic mainly to and from central and southern Europe and the Near and Middle East.

Although under the provisions of the concession the CTNE does not exploit telegraphic services, it leases its own facilities to and installs facilities for the DGCT, ENTEL and official telecommunication networks of various government departments and agencies

(official telephone network of the DGCT, facilities for the three Armed Forces, police forces, the official new agency EFE, civil aviation authorities, the Directorate General for Radio Broadcasting and Television in the Ministry of Information and Tourism, the American naval and air forces and others).

DGCT. The DGCT exploits the major portion of Spain's public telegraphic services. It operates its own facilities and leases additional ones, mainly from the CTNE. The services it provides include, in addition to traditional telegraphy, Telex, Gentex (public automatic telegraphy), phototelegraphy (only between Madrid and Barcelona), marine radio telephony and radio telegraphy. International telegraphy is maintained through its own facilities, facilities leased from the CTNE and those of ENTEL. The DGCT also operates a government telephone network.

ENTEL. ENTEL is a state-owned company which mainly carries out a small but lucrative international telegraphy service by radio and cable. In addition it operates a small maritime radio telegraphy service over long distances and a coastal radio telephony and telegraphy service with fishing vessels.

#### Relative Importance of Different Organizations

Partly as a result of decrees ordering the rationalization of telecommunications services but also because of institutional

characteristics and government policy, the CTNE has become by far the largest entity in the field of telecommunications. It is understood that some 95 percent of the telecommunications "traffic" passes over facilities either owned or leased by this company.

The following table compares income reported for the years 1966 and 1968 for telecommunications services rendered, and planned investments for 1968-1971 (in millions of pesetas);

	Income		Planned Investment
	<u>1966</u>	<u>1968</u>	<u>1968-71</u>
CTNE	6,477	9,794	65,220
DGCT	709	862	2,000 (approx.)
ENTEL	315	413	374

The income derived from sources other than telecommunications services, is not included. This income is important for the CTNE (leasing and installations of equipment).

#### Jurisdiction

In Spain, the exploitation of public telephone and telegraph services is a state monopoly which falls under the Ministry of the Interior.

## The Regulatory Situation

### Role of the Compania Telefonica Nacional Des Espana

In the first Section it was shown that of the three major Spanish suppliers of public telephony and telegraphy services, the CTNE is by far the largest and most dynamic. While it is mainly engaged in the field of telephony, for a variety of reasons, including technical developments, political considerations, and the need for more efficiency, the company is becoming engaged in telegraphy as well. Hence regulation and control of the CTNE is of special interest.

Formally, government control of the company is established in the contract with the State. In actual fact, the relationship between the Company and the government is quite different from the one suggested by the contract: CTNE is a special government instrument with many characteristics of a private company, whereby the planners of Spanish economic development have gained access to private capital market in order to attract large quantities of Spanish and foreign funds required for expansion.

The management of the company is appointed by the government in virtue of the effective control the latter exercises through holding 41 percent (1966) of the stock, with the remainder dispersed among over 90,000 shareholders. The company, because of its access to capital and its size and diversification has so much power and knowhow in all aspects

of telecommunications, that the other two principal suppliers of telecommunications services, the DGCT and ENTEL, are being forced into a more and more passive role.

Under the circumstances, control and regulation of telecommunications provided by the CTNE has very much become the direct business of the government rather than a limited intervention in an essentially private enterprise designed to protect the public interest.

#### The Regulatory Approach

The essence of the regulatory approach is contained in the contractual arrangements between the telecommunication company and the State. An extract from this contract will serve to indicate the type of regulation called for with respect to CTNE.

For greater efficiency and more exact fulfilment of the provisions of this contract, it has been agreed by the Council of Ministers that a government delegate will be appointed to the company who will be endowed with the following powers:

- (1) To inspect, where necessary with the co-operation of the Directorate General of Postal Services and Telecommunications, the functioning of the services that are the subject of this concession, in order to ensure the fulfilment of the bases of this contract.



- (2) To be informed about the company's plans for works and construction, to ensure the efficiency of the public service and the interests of national defence.
- (3) To approve the technical regulations relating to installations and networks, as also those dealing with the supply of services mentioned in base 1.
- (4) To deal with and resolve complaints that may be lodged by subscribers and the public.
- (5) To be informed of the financial situation and of the audit of the company, with the power to request explanations and details that may be considered necessary.
- (6) To submit, with his report, for the approval of the Minister of Finance, the balance sheet and accounts referred to in base 21 of this contract.
- (7) In accordance with the provision of base 24 of this contract, to give his approval when the company writes off on the depreciation account an annual sum less than two percent or greater than five percent of the amortizable assets.
- (8) With his report, to inform the government of the suggested tariffs for all classes of services in accordance with the contents of base 19 of this contract.
- (9) In the manner and under conditions which will be laid down in the regulations for administering this contract, to obtain permits and deal with rights of free passage and expropriations which may be required by the company for the installation, conservation, modification and reformation of its centres, networks and lines.

The said government delegate, when necessary, will inform the company of whatever observations he deems necessary in line with the performance of duties assigned to him, for the consideration by the company's administrative council and, once the appropriate agreement has been reached, the government delegate will be informed and will take whatever action he deems appropriate.

In the event that the government delegate adopts a course of action that the company consider harmful to its interests or rights, it may within a period of 15 days, lodge an appeal before the Presidency of the government. Should the Presidency of the government confirm the action of the government delegate, the company may appeal within 15 days against the decision of the Presidency, as set down in base 26 of this contract, before the council of Ministers, subject to the procedure and effects laid down therein.

The said government delegate will also have the right to attend, with the right to speak but not to vote, all meetings held by the administrative council and the executive committee of the company. When the said organs come to an agreement on the interpretation of the bases of the present contract or approve the rules or regulations of service affecting the public or the subscribers, the government delegate will be entitled to suspend the said agreements and the company may, within fifteen days, appeal against such decision before the Minister of Interior.

If the Minister of Interior should ratify the suspension by the government delegate, the company may appeal before the council of Ministers as stipulated in case 26 of this contract.

Apart from the government delegate referred to in the preceding clauses of this base, the government will also appoint and freely terminate three counsellors, with equal faculties and duties, as defined for other members of the administrative council in the company statutes.

In the event of absence or illness, the government delegate may, in either case, confer his representation for the purpose of this contract, to one of the three consellers referred to in the preceding paragraph.<sup>2</sup>

2. This is an unofficial translation of Base 8 of the Contract between the National Telephone Company of Spain and the State, dated December 21, 1946.

SWEDEN

SUMMARY INFORMATION

Total Telephones..... 4,110,579

Telephones per 100 Population..... 51.76

Per Cent Automatic..... 99.5

Telecommunication Carriers

Domestic Telecommunications..... ( Telecommunications Administration

International Telecommunications.... ( Telecommunications Administration

Regulatory Environment (Telecom)..... ( Government

( Board of Telecommunications

Broadcasters..... ( Sveriges Radio

Regulatory Environment (Broadcasting)..( Government

( Board of Governors

( Radio Council

SWEDENThe Provision of Telecommunications Services

The telecommunications services in Sweden are provided and operated by the Telecommunications Administration which is one of the trading concerns run by the Swedish State. It is a state-owned commercial enterprise.

Administration Activities

This Administration is in charge of the public telephone, telegraph and telex communications, both inland and international, as well as of the radio communications with ships at sea forwarded through Swedish Coast Stations. Furthermore, the Administration leases to shipowners the radio stations installed on board Swedish commercial ships. Also, in large cities it provides base and mobile radio-telephone stations for land mobile communications.

The Administration also installs and maintains, on behalf of the National Civil Aviation Administration, land radio stations for civil aeronautical mobile services and radio navigation.

Data transmission via the telecommunication network is a new sector of communications for which facilities are provided by the Administration. It is greatly expanding, keeping pace with the growing use of data processing in trade, industry, and commerce. The Administration leases to its customers point-to-point circuits for data transmission as well as for telegraph and telephone communications.

With respect to sound broadcasting and television, the Administration provides for the distribution and emission of programs. The programs themselves are produced by a state-controlled private company, the Swedish Broadcasting Corporation.

It is interesting to note that the Administration runs its own factories manufacturing various kinds of telecommunication equipment, in particular automatic telephone exchanges, subscribers' branch exchanges and telephone instruments.

#### Development and Growth of Telecommunications

The work of the Telecommunications Administration has greatly expanded during recent years. Particularly the years since the end of the Second World War have been characterized as far as the Administration is concerned by an immense increase in business, accompanied by continuous intensive technical development. A forecast for the next decade indicates that this progress will continue quantitatively and technically at an undiminished or increased rate.

Thus further expansion of the telephone services may be expected in the near future. The Administration believes that there will probably be a 50% increase in the number of telephones in the network during the period until 1980, and a corresponding rise in telephone traffic.<sup>1</sup> Automation of the inland telephone services is now in its final stage and will have been practically completed

1. According to recent estimates (by Jan. 1970) the increase over the 1969-1980 period will be approximately 40 per cent.



by the early 1970's. The transfer to automatic operation of Sweden's telephone traffic with foreign countries will proceed and be extended to service more and more distant parts of the World.

The telegraph service is now admittedly showing a tendency to decline, and no change in this respect is to be expected, but a successive rapid expansion of the telex system may be expected, and telex traffic with other countries will greatly increase.

As regards broadcasting, a further increase in programme activity in both sound broadcasting and television is imminent, and with it a greater need for programme circuits. The distribution network will be enlarged for the introduction of a second television network and colour television. In the field of radio otherwise, new developments - foremost among them, the miniaturization of components and of elements for amplifier and radio techniques - will make possible considerably increased installations of radio-telephones in cars as well as in pleasure craft and other small vessels for mobile radio service.

The new sector of the Administration's activities that is represented by data transmission will grow to an extraordinary extent owing to the rapidly increasing rate of growth in the use of computers in the community and in trade and industry. The course of development - above all in the United States - promises that data transmission in future will be the economically most important sector of business in the Administration, next to the telephone service.

The rapidly progressing course of technological development is setting its mark on the work of the Administration. Development of the techniques used in telephone exchanges and for telephone circuits, as well as in radio engineering, is characterized today by the increased use of electronic components of the semiconductor type, and the assembly of such components to form easily-handled, exchangeable modular units. Data processing techniques, too, will come into increasing use in the Administration's installations. In the electronic telephone exchanges of the future special data processing equipment will control switching-processes, and the operating methods of telephone exchanges will be determined by the programmes fed into computer equipment. This programme control represents the greatest step forward for many decades in automatic telephone exchange engineering, and exchanges worked by this system are expected to result in substantial advantages for the Administration (from the point of view of operational economy and reliability, for example) as well as for telephone users, who will be able to use the telephone for services which exchanges existing today cannot perform. In cooperation with the L.M. Ericsson Telephone Company, the Administration is conducting far-reaching work for the development of telephone installations of this kind, and recently a test station of such a type (a programme-memory-controlled exchange) has started work. It is believed that it will be possible to effect a changeover on a large scale to such installations in the early 1970's.

The use in recent years of man-made satellites for telecommunication purposes has opened up new routes for the transmission of telephone calls and telegrams as well as of television broadcasts, etc. In cooperation with the telecommunications administrations of the other Nordic countries, the Administration is to build an earth station in the western Swedish province of Bohuslan for the direct reception and transmission of telecommunication traffic via satellites in space.

### Jurisdiction

The Telecommunications Administration is a state-owned and operated Agency; therefore, it falls under the authority of the State.

Sweden is a monarchy with a parliamentary form of government, which means that the King appoints his Ministers from among those who have the confidence of the majority in the Riksdag (Parliament). It is therefore the Ministers who have the real power of government. The Riksdag is elected by universal suffrage and the form of government is consequently democratic. The Riksdag has the legislative power and has the right to impose taxation and determine questions concerning the revenue and expenditure of the State. Decisions by the Riksdag form the basis of the government of the country. The Riksdag does not, however, concern itself with administration. The management of the country is dealt with by the Government. The Government

FIVE YEAR SUMMARY

SWEDISH TELECOMMUNICATIONS ADMINISTRATION FACILITIES

	<u>1964/65</u>	<u>1965/66</u>	<u>1966/67</u>	<u>1967/68</u>	<u>1968/69</u>
<b>TELEPHONY</b>					
Telephone exchanges at Jan. 1st.					
Manual.....	1,303	1,071	737	545	38
Automatic.....	5,493	5,693	5,974	6,140	6,31
Total.....	6,796	6,764	6,711	6,685	6,67
Subscriptions for main stations					
Total at January 1st.....	2,723,081	2,860,340	2,996,904	3,122,234	3,251,66
Increase over preceding year, %...	4.8	5.0	4.8	4.2	4.
Telephone Sets					
Total at January 1st.....	3,386,925	3,572,630	3,757,495	3,934,694	4,110,57
Increase over preceding year, %.....	5.1	5.5	5.2	4.7	4.
Telephone calls, thousands					
Local and toll.....	3,465,600	3,624,945	3,884,133	4,058,919	4,253,74
Trunk.....	499,919	567,532	629,771	663,044	711,18
Outgoing international.....	3,904	4,510	5,246	6,402	7,65
Total.....	3,969,423	4,196,987	4,519,150	4,728,365	4,972,59
<b>TELEGRAPHY</b>					
Telegraph offices at Jan. 1st.....	1,284	1,185	1,087	1,030	99
Telegrams in thousands					
Inland.....	3,240	3,180	2,937	2,735	2,47
Outgoing international.....	1,328	1,338	1,290	1,199	1,16
Total.....	4,568	4,518	4,227	3,934	3,63
<b>TELEX</b>					
Telex exchanges at Jan. 1st.....	20	20	24	30	31
Telex subscriptions at Jan. 1st...	3,334	3,791	4,234	4,785	5,418
Call units recorded in the inland service, thousands.....	11,821	15,314	17,751	17,923	20,034
Minutes of outgoing international calls, thousands.....	8,084	9,241	10,277	12,156	13,154

SWEDISH TELECOMMUNICATIONS ADMINISTRATION FACILITIES

	<u>1964/65</u>	<u>1965/66</u>	<u>1966/67</u>	<u>1967/68</u>	<u>1968/69</u>
IO					
Sound-broadcasting stations					
at January 1st.....	94	102	102	103	110
Sound-broadcasting fees at					
January 1st.....	2,947,317	2,953,687	2,924,596	2,927,908	2,927,145
Ditto per 1,000 population.....	383	380	373	371	369
Television stations at January					
1st.....	106	117	123	146	161
Television fees at January 1st...	1,963,682	2,084,880	2,160,435	2,267,653	2,344,645
Ditto per 1,000 population.....	255	268	275	287	295
Coast radio stations at January					
1st.....	7	7	7	7	6
Radio calls via coast stations,					
thousands.....	156	164	172	181	195
Radio telegrams via coast					
stations, thousands.....	140	137	142	149	147



administration is divided into Ministries, with a Cabinet Minister as head of each Ministry. There are at present eleven Ministries. The administrative bodies (courts of justice, State administrations, the defence forces and the ecclesiastical authorities) are each subordinate to the Ministry concerned with its work.

The decisions of the Riksdag and the Government form the basis of the State administration. The tasks, responsibilities and powers of the administrative authorities are established by statutory instructions. Directives regarding the work consist of decisions arrived at by the Government in the statutory manner.

Within the above described framework, it rests on the directing heads of the various authorities to carry out the tasks laid on the authority, on their own responsibility, independently and without interference from the governing power. This freedom and independence in the exercise of official duties is an important principle of the Swedish State administration.

### The Regulatory Situation

#### General Principles

The power granted by the Constitution to the Government and the Riksdag regarding the State administration forms the basis ensuring that the intentions of the governing powers will be carried out in the fields of the different administrative bodies. The public

control over the activities of the business operating authorities makes itself chiefly felt as regards the question of investments for extending activities and in respect of rates policy in the postal, railways and telecommunications administrations. The authorities of these administrations are required to submit to the Government for each financial year estimates of requirements for new investments and must then present reasons for the grants desired but without having to specify each object in the different branches of activity. The estimates are then dealt with in the Ministries concerned.

In the discussions on the investments that take place in this connection between representatives of the Government and of the Administration Boards the policy of the enterprise and the goals aimed at are considered. In the planning of public utility undertakings such as are carried on, for example, by the postal, railways and telecommunications administrations, there are social and community points of view that come into question besides the purely financial principles of enterprise.

After each Ministry has drawn up the budget estimates for its own field and adjustment has been made in the common drafting under the direction of the Minister of Finance, the Government submits to the Riksdag its bill concerning the requisite appropriations. In the Riksdag the investment questions are first considered by a committee (the Budget Committee), to which representatives of the Boards of the different business operating administrations are usually

given opportunity to present their views. The Riksdag then makes the decision regarding the appropriations.

The Government establishes on the proposal of the administrative authorities the rates for the railways and telecommunications. Nevertheless it is the Boards of the respective administrations who have in the first place to supervise the fixing of rates and draw up proposals regarding new or modified rates.

From the account given above it will be seen that the administrative business is based on legislation and other decisions by the Government and Riksdag. In a country with democratic government such decisions will bear the stamp of the dominating political opinion in the country. Even though the heads of the administrations are untrammelled in exercising their work, yet it is the mission of the administrative bodies to realize the intentions of the governing powers. The guarantee that this is really done lies chiefly in the power which the Government and Riksdag possess over the administration.

### Controlling Bodies

Control by the State with regard to State undertakings is exercised by six bodies: the Diet, the King in Council (the Government), the Controllers appointed by the Diet, the National Office of Accounts and Audits, the Justice Chancellor, and the Parliamentary Attorney's to the Legal and Civil Administration.

The Diet. The Diet carries out its control functions both as the legislative body and the power authorized to allocate credits and to direct the establishment of higher bodies of State. Although it is not empowered to intervene directly in the current affairs of State undertakings or their regional or local administrative units, the Diet defines, in its overall lines, the organization of their activities. Thus, in the legislation regulating social policy, income and other tax questions and the finance policy, etc., there are stipulations implying one way or another that the Diet has a control power over the organization of these activities. This power can also be shown by the decisions taken by the Diet on the allocation of credits for various purposes, and this is how the Diet is in a position to control the development in an efficient way.

The King in Council. The King in Council holds the absolute right to manage and supervise the activities of the State undertakings, while taking into account, of course, the laws and regulations presently in force and the financial limits established by the Diet. However, in practice, such undertakings have considerable independence involving a wide liberty of action within the powers granted by the King in Council. The orders enacted by the King in Council regarding the management of public affairs are in the form of an Instruction for each State administration. The Instruction presently in force regarding the Administration of telecommunications was established on December 3, 1965, by the King in Council.



The Controllors appointed by the Diet. The auditing of accounts is not one of the tasks given to the Controllors appointed by the Diet. Their recommendations deal mainly with those conditions which to them do not seem very satisfactory and rational as regards efficiency. They endeavour to find solutions apt to make the carrying out of administrative duties more flexible and, also, less costly.

The National Office of Accounts and Audits. The power of the National Office of Accounts and Audits is rather restricted in the area of administrative examination relative to the activities carried out by the Administration of telecommunications. In a large measure, the administrative examination and the auditing of accounts are made by the Administration itself.

The Justice Chancellor. The Swedish Constitution includes provisions relative to the control of the functions and activities carried out by the State undertakings and by their officers. The supervision of Justice administration is the responsibility of the Justice Chancellor, who is appointed by the King in Council. Thus, he must expose any error made by the judges and other officers in the carrying out of their function.

The Parliamentary Attorneys to the Legal and Civil Administration. The Parliamentary Attorneys to the Legal and Civil Administration are given, as agents of the Diet, about the same tasks as the Justice Chancellor; they see to it that laws and regulations be respected and prosecute the officers who have failed to carry out their professional duty.



In addition to the above, one should mention that the Administration of telecommunications (like the other State administrations) is obliged to observe the so-called "publicity" principle, which means that, except as otherwise specified, all the documents of the Administration are public and available to all.

### State Control

Every year bills on the proposed new investments of the public enterprises must be considered in Parliament. In that connection the Standing Committee of Supply can examine the activities of the public enterprise in question during the previous year and give directory advice for the next year. Parliament also has the right to decide on the number of permanent posts. Consequently Parliament can control and influence the policy and development of the public enterprises. Furthermore, as noted previously, the Parliamentary auditors carry out an examination to ensure that the intentions of Parliament are observed.

The Government exerts influence over the public enterprises by submitting bills on their investments to Parliament and by presenting lists of permanent posts. The Government also has the right to decide on the employment of temporary staff officers. Further, one of the duties of the Government is to lay down the budget of current expenditures. It also examines the results of the previous year.

It is characteristic of the Swedish civil service that there is a definite line between ministries and agencies (ambetsverk). This is a result of the historical development through centuries and is not directly based on considerations as to the ideal organization of the civil service.

The fundamental idea behind this is that it is possible to draw an exact line between political and administrative decisions. The Government is responsible for the former, the agencies for the latter.

The consequence of this organization is that Swedish ministries are comparatively small, as many matters which in other countries are handled by ministries, belong to the sphere of competence of a Swedish agency. An agency is a fairly independent body - it is obliged to take orders from a minister only if he acts through a formal Government decision (the King in Council).

As regards the State's commercial activities these are usually performed by one of the seven public enterprises (affarsdrivande verk) or by a joint-stock company. There are about 35 state-owned companies and about 100 subsidiary companies.

The three organization forms mentioned are thus, in order of degree of independence of state authorities, agencies, public enterprises and companies, companies enjoying the highest degree of freedom.

## Public Complaints

The Swedish Constitution does not allow questions to be asked in the Riksdag concerning individual administrative decisions taken by the Agencies. Only questions of a general nature on the application of the legislation and regulations may be raised. This is reasonable as Ministers are unable to influence the decisions of Agencies in particular cases. Nor may questions be raised on individual administrative decisions taken by the King in Council. In this latter case, however, criticism may be levelled in the constitutional standing committee which annually scrutinizes all decisions taken in Council. A majority finding against a Minister, endorsed by the Riksdag would lead to his resignation.

In fact, by tradition and because there are other remedies, the Riksdag is only to a limited extent a forum for criticising administrative practices.

The right of appeal against all administrative decisions taken at a subordinate level is, of course, one check on malpractices. But a more important alternative to questions in the Riksdag is the existence of the two Ombudsmen (one for civil affairs and one for the armed forces) who are appointed by the Riksdag and are independent of the Government.

## The Regulatory Approach

### Control of the Telecommunications Administration

The Telecommunications Administration enjoys relative autonomy which permits it to enjoy a considerable freedom. The Swedish state has not sought to make telecommunications a source of revenue or a means of subsidizing other activities, thus it has not altered its natural development.

The telecommunications service is organized like an industrial enterprise. The means of assuring an efficient management, in order to obtain the best service at the best price, while at the same time safeguarding the financial stability, are largely granted to it. It is particularly necessary to note, in this regard, the powers given to the Telecommunications Administration; the relative autonomy in the use of funds and the management of personnel and the freedom of action of the guiding principles.

One of the indications of these characteristics of the Administration is the great freedom of action of the Director General in choosing and using his courses of action.

### Management of the Administration

The Administration is headed by a Board of Telecommunications. Members of this Board are the Director General of telecommunications, who is also the Board's chairman, and five persons chosen from outside the Administration and appointed by the King in Council.

The Director General and the heads of the departments of the central administration constitute the General Directorate of Telecommunications.

According to the instructions issued by the King in Council for the Telecommunications Administration, the Board of Telecommunications shall decide upon:

1. essential statute questions;
2. essential questions regarding organization;
3. work regulations and service instructions;
4. applications for funds to be granted by the Diet and other financial questions of major importance, as well as other questions of importance submitted to the Board by the Director General for discussion in plenary session.

Questions not subject to treatment in plenary session are decided by the Director General or - by delegation of authority - by the head of a department of the central administration or another official.

The heads of the departments of the central administration must be present at the meetings of the Board in order to introduce the questions relating to their respective fields. They are not entitled to take part in the decisions but have the right and the duty to take reserves against decisions to which they cannot agree.



### General Administrative and Financial Principles

Owing to the commercial character of its activities, the Swedish Telecommunications Administration - like the Postal Administration, the State Railways, and the State Waterfalls and Power Administration - enjoys a greater freedom of action, in certain respects, than those State Administrations which have a purely administrative character. This is true both as regards the disposal of funds and with reference to questions relating to the staff employed. However, certain classes of questions must be submitted to the Diet or the Government for decision.

Thus, for instance, the Diet fixes the number of permanent posts in the higher grades of the Administration's staff. Grants for new installations and for the purchase and erection of buildings are voted by the Diet, and at the same time the Diet fixes the maximum investment for all purposes. The Government issues instructions concerning the duties incumbent on the Board of Telecommunications and regulations concerning the salaries of the supernumerary staff (excepting workers, temporary telephone operators, etc.) and fixes the number of permanent posts of the lower grades as well as telephone and telegram rates of primary financial importance. The Government also appoints the holders of the top-level posts. Moreover, the annual budget of the operating costs of the Telecommunications Administration is fixed by the Government; this budget, however, is not of an absolutely binding nature. The Administration is not formally

required to pay an interest on the capital invested in the telecommunication services. However, the whole of the surplus arising from these services, after deducting the allocations to be furnished to the depreciation account, is paid each year into the Treasury. It is incumbent upon the Administration to provide for the profit to be at least equal to the amount payable, at the current rate of interest, in respect of the Administration's share of the national debt. In other words, if the funds contributed by the State are considered as share capital, the surplus is expected to correspond to a fair dividend on this capital.

Depreciations regarding the Administration's fixed assets are provided for in the form of annual allocations to a depreciation account. Such allocations are made on the basis of the actual cost of replacement of installations and buildings, at the following rates: 4 per cent in respect of telephone, telegraph, and telex installations: 10 per cent in respect of commercial radio installations: and 2 per cent in respect of buildings used for commercial telecommunication purposes. On the other hand, installations including buildings used by the sound-broadcasting and television services should provide their own capital. The costs of purchase of motor vehicles, tools and office supplies are regarded as costs of operation and are not included in the installation capital.

The cost of new installations is defrayed, in the first place, from the allocations paid to the depreciation account. If further money is required, this is obtained from State loans. Thus, in the year 1967/68 the Administration supplied about 81 per cent of the total installation costs, while the Treasury contributed the remaining 19 per cent. The working costs of the Telecommunications Administration, being a State-owned commercial enterprise, are to be met out of current receipts.

### Provisions of Service

The aspects of service are fundamental to all activities pursued by the Telecommunications Administration. No matter what the occupation of the individual employee, the group or the department may be, their first and foremost duty is to offer service, in a direct or indirect way, to the Administration's customers. The fact that the Administration exercises a virtual monopoly in the telecommunications area does not signify that questions relating to service are neglected. On the contrary, the very absence of the competition stimulus increases the necessity for stressing the importance of giving care to the maintaining of a high service level. Although, considering the status of the Telecommunications Administration, the endeavour to achieve profitability should always be a guiding principle, keeping a satisfactory service grade is in no way incompatible with the commercial aspirations. Thus, the level of the service offered is constantly being followed up within the various units. The results of measurements and market interviews made in this respect are coordinated and presented in the

form of statistics concerning construction, sales, maintenance activities as well as services rendered in the handling of calls and messages.

The ultimate judge on any question relating to service is the customer who, by making complaints or proposals in view of effecting service ameliorations, can always influence the prevailing situation and bring about changes.

### Special Considerations

#### Management of Radio Spectrum

The Swedish Telecommunications Administration in its capacity of administration responsible for discharging the obligations undertaken in the International Telecommunications Convention and the Regulations annexed thereto represents Sweden in the ITU Conferences concerning allocation and use of frequencies for different services. Advisers representing other radio services may be included in the Swedish delegations to the extent required. The Administration is, in consequence, also responsible for the control of the use of frequencies for different purposes by all kinds of radio services in Sweden.

According to the Radio Act, No. 755, December 30, 1966, and the Proclamation of the Crown No. 446, June 9, 1967, a radio transmitter may be possessed or used in Sweden only by a person who has received a licence from the Swedish Telecommunications Administration



(exception for military transmitters), which assigns frequencies and issues technical and other regulations for the use of the frequencies. Governmental authorities are exempted from the compulsory licence system, but frequencies and regulations shall still be stated by the Telecommunications Administration. A fee is to be paid to the Administration for the possession of every radio transmitter except those intended for military purpose.

### Broadcasting

The Telecommunications Administration is responsible for the distribution of sound broadcasting and television programs. The sound and television broadcasting services in Sweden are handled by the Telecommunications Administration as far as the programme distribution is concerned, whereas the production of programmes is entrusted to a private State-controlled company, the Sveriges Radio AB. The Telecommunications Administration's duties comprise the installation and maintenance of transmitters and programme networks and the elimination of interference. Moreover, the collection of reception fees is incumbent on the Administration.

### Sveriges Radio

According to law and the Agreement with the Government, Sveriges Radio is vested with the sole and exclusive right of sound and television broadcasting in Sweden as defined by law. The status of the Corporation can be said to be that of a non-profit-making public corporation, while it has been given the legal form of a limited company.



Sixty per cent of the share capital is owned by the popular movements: twenty by industry and commerce, and twenty by the press organizations and individual newspapers.

The Board of Governors consists of a chairman and ten members together with ten alternate members. The members and alternates represent cultural and public interests as well as administrative, economic and technical expertise. Half the Board together with the chairman are nominated by the King in Council, the other half being elected by the shareholders in proportion to their holdings.

The Government also nominates a Radio Council of seven members. The task of this Council is to see that Sveriges Radio shows both impartiality and objectivity in the exercise of its exclusive rights and that the principles laid down in the Agreement between Sveriges Radio and the Government of Sweden are adhered to. On the other hand the Council is not competent to issue directions for future policy concerning the form of content of programmes.

The Council also functions as a committee of review with whom complaints can be lodged about broadcast programmes.

Thus the Council has no power of censorship and cannot give any directives either to the Director General or to the Board of Governors. The work of the Council is governed by the "Regulations for the Radio Council of 9th June 1967".

The broadcasting activities of Sveriges Radio are financed by sound radio and television licence fees. Only educational programmes and external broadcasting are financed out of public funds.

Sveriges Radio is not allowed to grant programme time for commercial advertising in return for remuneration of any kind.

SWITZERLAND

SUMMARY INFORMATION

Total Telephones..... 2,685,800

Telephones per 100 Population..... 43.42

Per Cent Automatic..... 100.0

Telecommunication Carriers

Domestic Telecommunications..... ( Entreprise des Postes, Téléphones  
et Telegraphs. (PTT).

International Telecommunications.... ( Entreprise des Postes, Téléphones  
et Telegraphs. (PTT).

Regulatory Environment (Telecom)..... ( Federal Council  
( Minister of Transport and Energy

Broadcasters..... ( Société Suisse de Radiodiffusion et  
Télévision (SRR).

Regulatory Environment (Broadcasting)..( Federal Council  
( Minister of Transport and Energy



SWITZERLANDThe Provision of Telecommunication Services

The two bodies engaged in telecommunications in Switzerland are the P.T.T. "Entreprise des Postes, Téléphones et Télégraphes" and the S.S.R. "Société Suisse de Radiodiffusion et Télévision". They are responsible and accountable to the Federal Minister of Transport and Energy, who has a "Surveillance authority" over both. Through this Minister they are responsible to the Federal Council, the equivalent of a Federal Cabinet. The P.T.T. and the S.S.R. belong entirely to the Swiss Confederation.

The P.T.T. supplies the following services: Postal Telecommunications, telephone, telegraph, telex (leased lines), rebroadcasting, telebroadcasting, radio and television broadcasting. In the last three cases, the P.T.T.'s responsibility rests with supplying the equipment only. All programming is done and controlled by the S.S.R. The two organizations hold a monopoly in their respective areas.

The rate of growth during the past ten years may be discovered by regarding the figures shown on page 155, where one may compare the growth of Swiss Telecommunications between 1958 and 1968. The Table provides some statistics relative to the PTT's finances, and telecommunications traffic.



The figures show that the installation of new telephone sets is stabilizing at 100,000 sets per year. The telegraphic traffic has remained the same over the last ten years. The teleprinter and telex service has increased five-fold over the last decade. The number of radio listeners is nearing its peak and will only increase in proportion with the population. The fact that some residents do not have radio is related to the geography of the country which would make complete coverage almost impossible. The number of television viewers has increased almost twenty times since 1958. The Television growth figures are normal as the S.S.R. started its regular Television service in 1958.

### Jurisdiction

#### P.T.T. (Entreprise des Postes, Telephones et Telegraphes)

The P.T.T. is the one and only supplier of Telephone, telegraph and postal services, as well as related services. P.T.T. is a federal government monopoly "de jure". (art. 36 of the Constitution). The basic law regulating the P.T.T. dates back to October 1922 and with amendments remains in effect today.

### The Regulatory Situation

Some of the more interesting points in the P.T.T. regulations are summarized as follows:

## The Legal and Organizational Basis

### 1. The Telephone Monopoly

The telephone monopoly constitutes the sole right, conferred on the PTT Enterprises by legislation, to install and operate facilities for the transmission of electrical or radio-electrical signals, pictures or sounds. Insofar as they do not exercise this right themselves, they can grant concessions to third parties. The concessionary companies can lay claim to their concessions only if there is a generally applicable regulation for the type of concession in question and if the applicant fulfills the prerequisites for the granting of a concession.

### 2. Exceptions from the Monopoly

The following installations are exempt from the telephone monopoly:

- a) The wire-electrical communication systems of the railway companies and of the common carrier services operated under a Government concession;
- b) The wire-electrical communication systems whose lines run through a property or through several contiguous properties, provided that the owner of the communication system enjoys real rights on these properties (ownership, building lease, usufruct), or has rented these properties;

- c) The wire and radio-electrical communication systems of the Armed Forces;
- d) The radio-electrical communication systems of the railway companies and of the steamship companies having a Federal concession.

3. Concessioned Installations

The major concession provisions are as follows:

- a) The connection of private facilities to the public system is prohibited (with the exception of police radio installations under specified conditions).
- b) As a rule, the concession is only granted if residential or business quarters of one and the same person, firm or authority are to be interconnected.
- c) The concessioned installations may only be operated for the purpose specified in the concession. In the case of telephone and telegraph installations their use is limited to the persons whose names appear in the concession.
- d) Concessions for wire-electrical installation to be used in the transmission of signals, pictures or sound beyond the frontier (e.g. by power companies) are subject to further restrictive provisions.
- e) Concessions for the operation of radio-electrical installations are granted only if a wire-electrical installation

proves to be unfeasible or unsuitable and if there is a sufficient need for the use of a radio-electrical system.

- f) For the issue of a concession an initial administrative fee as well as yearly monopoly fees are charged. No concessionary fees are charged for the wire installations safeguarding the public electric power supply.
- g) The PTT Enterprises can provide circuits to licensees on a subscription basis or authorize them to install lines on PTT poles or to lay private cables into PTT channels against compensation.

The question of telecommunications regulations is simple.

The final authority in all cases is the Federal Council.

The PTT regulations are defined by law which deals with every aspect of the PTT's operations. The law sets the basic tariffs and tax structure. PTT has the sole responsibility for all technical questions in the whole system of telecommunications. It owns all the equipment installed or stored in the country but the PTT does not manufacture equipment. It is free to purchase its equipment and material from any of the suppliers officially designated. It sets its own regulations concerning the use of this equipment within the context of the law.

Except for the basic rates structure and some major problems, the PTT is fully autonomous as long as it operates within the budget approved by the Federal Council. If more monies are needed in the

course of the financial year, a supplementary budget has to be submitted to the Federal Council, by the way of "ordonnances". A modification in the rate level and structure requires also the Council's approval.

On technical questions, consultation between the PTT and the SSR (which uses but does not own equipment) is required. There exists a "Commission Paritaire" whose responsibility it is to arrive at a consensus through their delegates to this Commission. If an agreement cannot be reached, either or both organizations have a right of appeal to the surveillance authority or in the last instance to the Federal Council, depending on the importance of the matter.

The Concession in the absence of a law sets the guidelines for the S.S.R.

Since it does not own equipment and the SSR is occupied with this question only within the framework of its present and future needs, it is mainly engaged in programming its respective broadcasting fields. The Concession clearly defines the rules of operations and as long as the SSR does not go beyond or against the provisions of the Concession, it is perfectly free to go its own way, subject of course to its own internal organization limit.

Section III of the Concession sets out the principles of programming, Section IV deals with the technical aspect of the regulations. The constraints imposed by the Federal Council are explained in art. 28-29-30. From the financial point of view, art. 29



of the Statutes imposes a further constraint on the SSR. It states indeed that the SSR's assets are the sole guarantor of its financial undertaking.

### The Regulatory Approach

The basic philosophy behind the Swiss approach to the Regulation of Telecommunications is one of maximum freedom, combined with maximum efficiency, both technical and financial. It also seeks to protect and promote the best interests of the Swiss people. Their approach to Regulations is therefore dictated by the imperatives of technical quality, excellent service, maximum autonomy and freedom of expression. The Government is present only to protect the interests of its people but it does not wish to unduly interfere with the activities of its agencies and relies on the admirable sense of responsibility of its employees. For any major issue, the authorities may have to consult the people by the way of referendum.

### Special Considerations

#### Management of Radio Spectrum

The management of the radio frequency spectrums and the body responsible would logically be the P.T.T. although the documentation

provided does not give details of the P.T.T.'s competence in this area. The document "giving the SSR's Concession October 1964 does say in Article 31:

"The SSR is required to co-operate with the PTT and on its own initiative to do everything necessary to ensure that the holders of receiving or transmitting installations, either radio or television, under concession, are called upon to apply for a concession. The SSR is further required to assist the PTT to locate receiving and transmitting installations which are not covered by a concession."

### Broadcasting

The SSR (Société Suisse de Radiodiffusion et Télévision) is a State monopoly "de facto", but not "de jure". No legislation exists in the field of TV and radio broadcasting. The SSR operates by virtue of a "Concession" only. In 1964 the Federal Council granted to the SSR a Concession for the use of the electrical and radioelectrical facilities and equipment of the PTT.

#### 1. Generalities

First Article:

The Federal Council grants to the SSR, Société de Radiodiffusion et Télévision, whose composition is set out in Article 7 below, the concession for the use of the wire and radio-electrical facilities of the PTT as well as other similar concessioned installations, for the purpose of the public transmission of sound and television broadcasts under the responsibility of the said Company.

The Department of Transport and Energy was charged with the task of implementing the Concession (art. 4).

Within the terms of the Concession the SSR is almost fully free of interference in carrying out its main tasks of programming and broadcasting. On the basis of the Concession, the SSR defined its organization in its statutes. A brief summary of the SSR at present is given on page 157.

#### Interesting Aspects of the Swiss Telecommunications System

The Swiss authorities' aim has always been the preservation of the cultural heritage of the country. Switzerland has four official languages, two main religions, regional differences and many political entities. She has therefore sought to insure that every citizen's right is respected. The Legislation on telecommunications reflects this goal.

The regional differences are also taken into consideration. Regional "Sociétés" have been created to this effect. Although they are finally responsible to the Central Administration, their location and their contacts with other local and regional organizations make considerably easier the task of achieving the regional goal. The Statutes of these regional organizations are worthy of study.

One particularity of the Swiss system is the collection of yearly subscription fees for the use of radio and television sets. Each Swiss household is taxed according to the number of radio and TV

sets it owns. The money collected this way goes for the financing of the networks operations and is distributed among the PTT and SSR according to an agreed formula: 30% to PTT for the equipment, 70% to SSR for its own financing and that of its regional offices. A proposal to change the tax rate structure has to be referred to the people by referendum.

One of the most interesting aspects of the Swiss broadcasting system is that of publicity (commercial). This "Société Anonyme pour la Publicité" was created with the responsibility of dealing with all aspects of advertising on Television. Advertising is strictly forbidden on Radio. Only the SSR (TV) has the right to use and diffuse publicity. One rule states that the advertising programmes must be separated from the other programmes.

The corporations' stocks are held as follows:

40% SSR

40% Newspapers Publishers Association

20% "Union des Paysans Suisses"/The Vorort/Arts &  
Crafts Association/Industrials Association/  
"Union Suisse des Journalistes".

All the profits if any go to the SSR.

PTT STATISTICS 1958/1968

FINANCE

	<u>1958</u>	<u>1968</u>
	Millions fr.	
<u>Operating Expenditures</u>	833.2	2279.6
Personnel Expenditures	433.3	962.5
Amortization and Interest	123.4	450.1
 <u>Operating Revenue</u>	 906.1	 2368.3
Posts	377.7	791.1
Telecommunications	514.1	1237.6
Other Revenue	14.3	339.6
 <u>Net Profit</u>	 + 70.3	 + 101.1
Operations	+ 72.9	+ 88.7
Extraordinary Profit/Loss	- 2.8	+ 11.7
 <u>Capital Value</u>	 2504.8	 7105.1
Property	307.0	1151.6
Equipment	1871.0	5330.6
 <u>Book Value</u>	 1073.9	 3463.6



TELECOMMUNICATIONS TRAFFIC

	<u>1958</u>	<u>1968</u>
<u>Telephones</u>		
Main Connections (thousands)	968.1	1736.4
Telephone Sets (thousands)	1475.0	2685.8
<u>Telephone Traffic</u> (millions)	1080.8	2034.7
Local calls	564.2	926.4
Long distance calls	465.1	1000.0
International calls	19.3	77.0
<u>Telegraph Traffic</u> (millions)	5.4	5.5
Internal Telegrams	0.9	1.1
International Telegrams	4.3	4.3
<u>Teleprinter Connections</u> (millions)	2337	10374
<u>Telex Traffic</u> (millions)	15.3	72.7
Charged minutes, domestic	5.1	20.8
Charged minutes, foreign	10.2	51.9
<u>Receiving Licenses</u> (thousands)	1349.5	1751.9
Broadcasting Licenses	1016.6	1279.3
Telediffusion Licenses	288.5	439.5
Rediffusion Licenses	44.4	33.1
<u>Television Licence</u> (thousands)	50.3	1011.2

## Société Suisse de Radiodiffusion et Télévision

The Swiss broadcasting organization SSR is a civil law institution (according to Article 60 FF, of the Civil Code it is organized as an association) which operates under a licence granted by the Federal Council as a public service. (The licensing authority is the Federal Council and the supervising authority the Federal Ministry of Transport, Communications and Energy).

Under the licence granted on 27-10-64 the SSR is responsible for the radio and television program service; 70 percent of the receipts from the licence fees are granted to it for this purpose. The Administration of Posts, Telephones, and Telegraphs (PTT) is responsible for the technical installations, and devotes 30 percent of all receipts from licence fees to this purpose. The radio set-owner's tax costs 40 francs a year, the TV tax 84 francs.

### Organization of the SSR (Statutes of 1-11-64)

Constituent Parts: the general assembly (103 delegates), the central committee (17 members), office of director-general and the auditors.

The SSR is composed of the following regional companies:

- the "Radio - und Fernsehgesellschaft der deutschen und der ratoromanischen Schweiz RDRS", including its member companies;

Radio - und Fernsehgenossenschaft in Zurich RFG, Radio - und Fernsehgenossen - schaft Bern RFB, Radio - und Fernsehgenossenschaft Basel RFGB, Ostschweizerische Radio - und Fernsehgesellschaft ORG, Innerschweizerische Radio - und Fernsehgesellschaft IRG, Cumunanza Radio Rumantsch CRR;

- the "Société de radiodiffusion et de télévision de la Suisse romande", consisting of La Fondation de radiodiffusion et de télévision at Lausanne and La Fondation de radiodiffusion et de télévision at Geneva;
- the "Societa cooperativa per la radiotelevisione nella Svizzera italiana "CORSI".

General control over the program service is vested with the Director-General of the SSR, who makes sure that the productions which are broadcast come within the law. He is responsible for the efficient operation of the organization.

The regional directors of radio and television direct the programming services in their regions.

The program committees, made up of different groups from public life as well as the listeners and viewers, give their opinions about the programs and study the policies laid down for the program service.

The Swiss short-wave studio has the task of presenting a living image of modern Switzerland to the world and strengthening the ties linking Swiss residents abroad and the mother country.

#### Radio and television studios and program offices

6 radio studios (Lausanne, Geneva, Lugano, Zurich, Berne, Basel)

3 TV studios (Geneva, Lugano, Zurich)

3 program offices (St-Gall, Lucerne and Coire)

Radio and TV center at the Palais Federal in Berne

Swiss short-wave studio at Berne

Office of program director and television studio at Berne.

#### Some Landmarks in the History of Swiss Radio and TV

- |                |   |
|----------------|---|
| 1922 - Aug. 22 | The first public transmitter erected in Switzerland at the Champ-de-l'Air by the city of Lausanne was placed in service; it was the third transmitter in Europe.  |
| 1923 - 1930    | The creation of broadcasting companies - playing a decisive part in the introduction of broadcasting to Switzerland - at Lausanne (1923), Zurich (1924), Geneva (1925), Berne (1925), Basel (1926), Lugano (1930) and St-Gall (1930).   |
| 1931-Feb. 2    | The creation of the Societe suisse de radiodiffusion - SSR which at that time included all the regional organizations.  |
| 1931 - 1933    | Placing in service of national transmitters - Sottens (25-3-1931); Beromunster (1-5-1931) and Monte Ceneri (21-4-1933).   |
| 1939 - April   | First broadcasts from the short-wave transmitter at Schwarzenburg.  |
| 1939 - Sept. 2 | Radio, with all its national transmitters is placed at the service of national defence until the end of hostilities. The Federal Council suspends the licence granted to SSR and radio is placed directly under the Department of Posts and Railways. Service de la radio-diffusion suisse (Swiss Broadcasting service) replaces the SSR and comes under the Director-General of the PTT. |

- 1945 - June 13 By order of the Federal Council, the radio wartime controls are abolished. The organizations of the SSR resume all their activities.
- 1946 Creation of the Societe de radiodiffusion de la Suisse centrale at Lucerne and of la Communauté romanche de la radio at Coire.
- 1952 - Jan. 1 The television program service is taken from the PTT and put under the SSR.
- 1953 - July 20 Transmission of the first experimental TV broadcasts in German-speaking Switzerland after trial transmission, in 1951 at Lausanne and in 1952 at Basel.
- 1954 - Jan. 28 First experimental TV broadcasts at Geneva; in 1955 the SSR takes over the French-speaking program service.
- 1956 - Dec. 16 The start of FM broadcasting.
- 1958 - Jan. 1 The start of regular broadcasts by Swiss television.  
- June 18 Placing in service of a TV transmitter at Tessin (Monte Ceneri) which is thus joined to the network of Swiss Television.
- 1964 - Jan. 11 Coming into force of the new radio and television licence on the basis of the new structure of the SSR.
- 1965 - Feb. 1 Introduction of commercial advertising on Swiss TV.
- 1966 - Jan. 3 Reorganization of radio programming (extension of the broadcast day and modernization).
- 1967 - April 27 First colour TV transmission in French-speaking  
& Switzerland broadcast by "La Dole" on the occasion  
28 of the 7th "Golden Rose of Montreux".
- Aug. 15 In preparation for the introduction of colour TV in Switzerland, the Federal Council adopted the PAL system.
- 1968 - Jan. 13 First colour telecast in German-speaking Switzerland: "Deutsches Fernsehen" relays the international quizz "Einer wird Gewinnen".
- Feb. Early in February the PTT and the SSR begin experimental broadcasting of coloured television.
- Oct. 1 Colour TV officially inaugurated in Switzerland.

UNITED KINGDOM

SUMMARY INFORMATION

Total Telephones..... 12,901,000

Telephones per 100 Population..... 23.26

Per Cent Automatic..... 98.1

Telecommunication Carriers

Domestic Telecommunications..... ( The Post Office  
( Municipal Systems

International Telecommunications .... ( The Post Office

Regulatory Environment (Telecom)..... ( Government

( Minister of Posts and Telecommunications

( Post Office Users Council



UNITED KINGDOM

The Provision of Telecommunication Services

Public Telecommunications service within Great Britain is provided by a Crown Corporation known as the Post Office. This organization was established effective October 1969. Previous to that date telecommunications services had been provided by a government department headed by a Minister and staffed by civil servants.

The public corporation has a monopoly on all telecommunications services including program and data transmission in the U.K. It has the authority to license other operators if it so desires with the consent of the Minister of Posts and Telecommunications. Licenses have been granted to a small number of other operators.

- (1) The City of Kingston-upon-Hull, and
- (2) The States of Guernsey and Jersey.

It appears that, with the exception of inhouse communication systems, which may be privately owned, all communications services are provided by the Post Office including private line services interconnecting privately owned terminal locations.

No information is available about the recent growth of telecommunications but the present development in terms of telephones per hundred population is 23.26 per 100.

The Post Office provides basic telephone services, long distance services, out of country telephone services, telex, television and radio program networks as well as telegraph, data services and custom designed line networks.

### Jurisdiction

The Post Office is under the general powers of oversight exercised by the Minister of Posts and Telecommunications.

### The Regulatory Situation

Under the enabling legislation the Post Office is charged with obtaining adequate revenues to cover all of its costs plus an operating surplus. There appears to be no specific legislation providing for rates. These are under the control of the Post Office but overall increases are approved by the Post Office Users Council and must be allowed at a level required to produce an overall rate of return of 10% on investment.

There is a right of appeal to the Minister of Posts and Telecommunications in cases where unjust discrimination is alleged and the Minister may order such discrimination stopped if he finds the complaint is justified.

In the reorganization which made the Post Office a Crown Corporation, the Minister of Posts & Telecommunications assumed the Postmaster General's functions in the field of wireless telegraphy and associated functions in the broadcasting field. This includes general regulatory control of radio transmissions and reception, and the issue of licences accordingly.

### The Regulatory Approach

No general regulation appears to exist. The Post Office is granted a monopoly and no other agency has authority over its affairs with the exception of the powers granted the Minister of Posts and Telecommunications and the powers granted to the Post Office Users Council, which appear to be relatively limited.

### General

In examining the effectiveness of the provision of telephone service in Great Britain some data is available. As mentioned earlier present development is 23.26 telephones per 100 population. Monthly and installation charges for residence and business individual service are as follows:

- Rental is charged quarterly in advance.
- The rental for an exchange line whether for business or social use is four pounds a quarter.

- for individual service, three pounds ten shillings for each partner or two party shared service.
- The connection charge for an exchange line within three miles of an exchange can be up to twenty pounds depending on the extent of wiring or other alterations required.
- An excess mileage charge of five pounds per route furlong applies in a few cases where new construction work other than a drop wire from a distribution point has to be provided outside the three mile limit. New charges for service are to become effective July 1, 1970.

With respect to service available it is estimated that:

- Plant and equipment are currently available to meet 86% of exchange connection orders. Sixty per cent of these orders, including all straightforward requests for single exchange lines, are completed by appointment within two weeks and the remainder within eight weeks. If line plant or equipment shortages exist the average delay in meeting requirements is just over four months. At the present time there are an estimated 250,000 unfilled applications for service.
- Subscriber trunk dialing is currently available to 85% of the customers and they dial 74% of all long distance calls. This service should be universally available by 1975.

- International subscriber dialing is currently available to eight European countries from London and five other large cities to about 34% of all customers.
- International subscriber dialing from London to part of New York is to be in service March 1, 1970.
- The average time to establish subscriber toll dialing is 36 seconds, the average time taken by an operator to set up a long distance call is 86 seconds.
- In addition to the monthly charges for service quoted above a unit charge based on the distance and duration of the call is assessed for each call.

### Contemporary Issues

In telecommunications regulation the establishment of the Post Office marks a major change in the environment and no further changes appear to be contemplated at this time. There is no information as to the reason for the changes which were made. Because of the rather massive change in the responsibilities for communication services in the British Isles and because the overall responsibility for the full country is at a single government level, it is unlikely that their current situation has any great relevance to the Canadian scene. It may be significant that they decided to move from a government department status to a crown corporation



status and that even with this change they have not permitted any competition to exist for any telecommunications service.

They have in effect created a profit centre and have separated the telecommunications operations from those of the postal services within the post office corporation so that the cross subsidization between these two services will no longer occur.

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